DISSERTATION FOR THE DEGREE OF DOCTOR OF PHILOSOPHY (PHD)

Exploring Health Service Quality Perceptions Among International Students: An Exploratory Sequential Mixed Methods Study

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Table of Contents

List of Abbreviations

1. UNESCO : United Nations Educational, Scientific, and Cultural Organization
2. HE : Higher Education
3. EU : European Union
4. UHC : University Health Center
5. SERVQUAL : Service Quality
6. HEALTHQUAL : Health Quality
7. PubHosQual : Public Hospital Quality
8. IOM : Institute of Medicine
9. STEEP : safety, timeliness, effectiveness, efficiency, equity, and patient-centeredness
10. FGD : Focus Group Discussion
11. IDI : In-Depth Interview
12. WHO : World Health Organization
13. GP : General Practitioner
14. IPA : Importance Performance Analysis
15. 4ES : Empathy, Equity, Effectiveness, Efficiency, and Safety

1. Introduction

1.1 Background

Since the advancement of science, technology, and transportation, there has been a rapid increase in global population mobility. People move from their home country to other countries with different purposes and identities, such as business people, international students, voluntary workers, tourists, or immigrants. These individuals are referred to as sojourners. Among the different types of sojourners, international students have always been a prominent group. Based on the UNESCO report, globally, the number of higher education students studying abroad has tripled from 2.1 million in 2000 to 6.3 million in 2020. This means there has been an increase of 198% in the past two decades. With an average growth rate annually between 5 and 6% per year, if not interrupted by the pandemic, by 2030, a figure of between 10 and 11 million would have been reached (1). Based on research results from Project Atlas (2017) shows that the main destinations of international students to continue their studies are the United States (24% of 4.6 million), the United Kingdom (11%), China (10%), Australia (7%), France (7%), Canada (7%), Russia (6%), Germany (6%), and other countries (23%) (2). Similarly, East Asia (China, Korea, and Japan) is experiencing the most prominent development in the number of students considering studying overseas, followed by Southeast Asia and the combination of Europe and North America(1).

Considering different historical, regional, and social-cultural differences, some countries have proposed an understanding of the characteristics and emphasised the role of internationalisation of higher education (HE) (3,4). The internationalisation of HE in Hungary started in 1989. Following Hungary's 2004 entry into the European Union (EU), Hungarian higher education has created new academic networks among higher education institutions and increased academic cooperation with other European nations. Hungary's higher education landscape closely relates to political and policy developments (3).

Higher education has undergone substantial transformations and reforms to equip universities to address the escalating demand for information and knowledge dissemination (2,3,5,6). In Hungary, the internationalization of higher education has significantly attracted a diverse cohort of international students pursuing studies across various academic levels. As a result, the internationalisation of higher education has contributed considerably to Hungary’s cultural, social, and economic development (3,7,8). Following the launch of the Stipendium Hungaricum

scholarship program in 2013, Hungary has emerged as a prominent destination for international students seeking higher education degrees (3,7,9). In the academic year 2022/2023, the number of international students is nearly 36.200(10), and most of the international students in Hungary are from Germany, China, Romania, Iran, Serbia, Slovakia, Ukraine, Turkey, Nigeria, and Norway. The majority of these international students are enrolled at the University of Debrecen, University of Pécs, University of Szeged, Eötvös Loránd University, and Semmelweis University (11,12).

A body of literature suggests that there are benefits to studying overseas; however, there are also potential challenges and adverse effects, including an elevated risk of poor mental health, cultural and language barriers, financial strain, and academic pressure (3,13,14). Research indicates that university students encounter numerous stressors during their studies, including academic workload, employment, housing, and interpersonal relationships (15,16). These stressors are often intensified and more complex for international students, who must adapt to cultural and linguistic differences while being distanced from familiar support networks, such as family and friends. Furthermore, due to the transition to a new country and environment, international students are prone to experiencing various degrees of physical and psychological adjustment (5,15–18), leading to transition stress and shock, which may lead to academic procrastination (4,7,19,20). Thus, universities must provide diverse support to facilitate international students' degree completion and attainment of their desired educational outcomes (5,9,21). To enhance international students' academic success and performance, the university must provide adequate support, mainly through accessible, high-quality healthcare services. Enhancing the quality of these services is crucial in delivering essential support to international students (22).

It has been proposed that, as a global institution, the caliber of healthcare services and the level of satisfaction experienced by students from diverse national backgrounds represent a fundamental aspect of the overall quality assurance system within universities (23,24). Consequently, enhancing the quality of services, particularly healthcare, to address the needs of international students is essential. (18,25).

In Hungary, research examining patients' perceived quality of healthcare services and their satisfaction remains insufficient (26). To the authors' knowledge, no study has investigated the perceived quality of healthcare services, specifically among international students. Such research is anticipated to enhance the understanding of the challenges faced by these students regarding

healthcare access. The results will empower policymakers, managers, and healthcare providers to improve service quality. Furthermore, dissatisfaction with healthcare can lead to academic and social withdrawal among students, potentially resulting in incomplete degree programs (24,27).

Quality of health care has a direct correlation to satisfaction (28). Patient satisfaction is a key objective of healthcare, reflecting the patient's evaluation of the quality of the services received (29). Furthermore, assessing and comprehending the experiences of patients, caregivers, and families regarding healthcare services will create opportunities for reflection and enhancement of both care quality and patient outcomes (29–31). The University of Debrecen is one of Hungary's host institutions for international students, offering healthcare services through its University Health Center (UHC). As stated on the university's website, the institution accommodates over 7,000 students from around the globe (32). The UHC has evolved into a comprehensive center that delivers general medical care to students while they are away from their primary care providers in their home countries. Healthcare services at the UHC are provided at no cost to students, either included in their tuition fees for self-paying students or funded by the Hungarian government through a social security service known as the TAJ card for scholarship recipients. (33). As healthcare providers, the UHC encounters and treats an increasingly diverse patient population, necessitating understanding various groups' characteristics and cultural values, particularly international students, to enhance service delivery (34). Consequently, it is essential for the UHC to evaluate service quality to identify what is functioning effectively and what areas require further improvement. (35,36)

The initial stage to improving service quality is to identify the strengths and weaknesses of the services provided using service quality measurement tools. Service quality can be assessed by comparing customers' expectations with their perceptions of the service received (37,38). Researchers advocate that service providers analyze the disparity between expected and perceived service quality to identify gaps. They emphasize the importance of utilizing patient feedback to enhance service quality and evaluate the experiences of medical care and patient’s perceptions of the quality of services rendered. (39–42). Gaining insight into the gap between expectations and perceptions can yield valuable information regarding the factors contributing to service excellence.

1.2 Significance of the Research

Various conceptual frameworks have been established to evaluate healthcare service quality, primarily focusing on the general population, with none explicitly addressing the needs of international students. To the author's knowledge, this is the first instance in which this approach to assessing primary care has been applied to an international student demographic. The University Health Center (UHC) serves as the primary care provider for international students enrolled at the University of Debrecen. Therefore, the findings of this study are anticipated to be advantageous for the center in refining its strategic planning, particularly concerning future resource allocation aimed at enhancing service quality within the University Health Center.

2. Literature Review

International students are at risk of experiencing problems that can affect their mental, physical, and social well-being. This demographic also encounters particular difficulties that affect their overall health, such as access to and quality of healthcare. Among these problems is the quality of students' healthcare treatments. With an increasing number of international students pursuing education abroad, understanding their perspectives on healthcare service quality is critical to their overall well-being and academic achievement. This literature review investigates the link between international students' well-being and healthcare service quality, highlighting significant findings, gaps, and recommendations for future research.

Studies indicate that international students face significant barriers to receiving healthcare services, such as a lack of knowledge, language barriers, and unfamiliarity with the local healthcare system. These obstacles may cause delays in seeking care and poorer utilization of accessible health services (6,22,43–45). Additionally, the lack of knowledge and uncertainty about health insurance coverage is another significant barrier to accessing healthcare services. Many overseas students claim confusion regarding the services covered and how to use their insurance successfully (17,18,46,47). Furthermore, the absence of cultural awareness among healthcare practitioners could make international students feel misunderstood or disrespected. Differences in cultures in attitudes toward health, illness, and treatment can exacerbate the patient-provider interaction (14,22,31,44,48). Studies also discovered that international students experience discrimination or bias in healthcare settings, which negatively influences their opinion of healthcare service quality and their willingness to seek care in the future (6,22,49).

Healthcare service quality is a multidimensional construct crucial in effectively delivering healthcare services. It includes a variety of characteristics, such as patient satisfaction, treatment results, and service delivery efficiency (50–54). Healthcare providers must provide high-quality services to preserve patient trust (50). Traditionally, healthcare quality was assessed using objective measures such as mortality, morbidity, infant mortality, etc. However, as time passed, the industry's structure evolved, and patients' participation in determining quality became increasingly important (50,55). Service quality is the difference between a customer's expectations of service and their perception of service after it has been given. When perception outperforms expectations, the client is satisfied (29,42,56,57).

The literature has established several frameworks and approaches for measuring the quality of healthcare services (38,50,54–56,58–60).

1. Donabedian, the Model of Care creator, introduced Donabedian's Model. This model is regarded as the first study of quality in healthcare. Donabedian, specifically referring to healthcare services, emphasized that the prospect of quality improvement depended on technical and interpersonal quality. Technical care refers to the medical treatment parts of patient care, whereas interpersonal care concerns speaking with the patient about their treatment. Donabedian's model includes seven dimensions to assess the quality of healthcare services: efficacy, effectiveness, efficiency, optimality, acceptability, legitimacy, and equity (51).
2. SERVQUAL Model: Developed by Parasuraman, Zeithaml, and Berry, it is one of the most used models to measure quality in service domains because of its comprehensiveness and practical usefulness. This model measures service quality across five dimensions: tangibles, reliability, responsiveness, assurance, and empathy(50,54).
3. The HEALTHQUAL Model is a modification of SERVQUAL that assesses the quality of healthcare services in a survey of hospitals. Camilleri and O'Callaghan developed it. This model is an approach includes six essential dimensions: (1) admission procedures, (2) attitudes of medical personnel (doctors), (3) attitudes of nursing officers, (4) ward/hospital environment, (5) patient amenities/facilities, and (6) discharge planning and coordination (61).
4. PubHosQual model. The public-hospital service-quality (PubHosQual) model was created with patients' input. Aagja and Garg (2010) designed this model to assess the quality of

public hospitals in India. It has 24 items classified into five categories of hospital service quality. The dimensions include admission, medical service, overall service, discharge, and social responsibility. The model was used to identify areas that required specific changes, which were then adjusted (61,62).

5. Institute of Medicine Quality (IOM) Dimension Model. This model gives unbiased healthcare information to the US government and business sector to increase healthcare quality for all Americans. This fundamental work conceptualized quality as six dimensions: safety, timeliness, effectiveness, efficiency, equity, and patient-centeredness (STEEP)(63).

It is crucial to highlight that these models have supplied some mutual understanding of quality in health care; however, it is essential to consider these models critically and focus on the general population and some models initially created for hospital settings. As a result, in a university health center that provides services to international students, it is critical to design a model based on the target demographic. This variability arises from the differing levels of healthcare service quality accessible to international students.

Location, language barriers, and institutional support influence accessibility. International students studying in English-speaking countries might have a different experience navigating healthcare services than non-English-speaking countries. Language barriers notably impact the quality of healthcare received by international students as miscommunication between healthcare providers and students might occur and lead to misunderstandings and inadequate treatment. Therefore, universities are pivotal in facilitating access to healthcare services to improve students' well-being. The well-being of international students is intricately linked to the quality of healthcare services they receive. Poor healthcare service quality can exacerbate mental and physical health issues, while high-quality, accessible healthcare can significantly enhance their overall well-being.

Some implications for practice that might be considered are universities should provide comprehensive orientation programs that include detailed information about the local healthcare system, how to access services, and understanding health insurance policies. Additionally, healthcare providers, healthcare workers and university staff should receive training to improve cultural competence, ensuring they can effectively communicate with and support international students from diverse backgrounds. Furthermore, universities might consider providing translation

services and healthcare information in multiple languages can help mitigate language barriers and improve the quality of care.

2.1 Objectives

Based on the preceding background and review of literature, the purpose of this study is to investigate international students' perceptions of the quality of service provided by the university health center. The study's specific aims were:

1. To investigate the quality of healthcare services as perceived by overseas students.
2. To establish a model for measuring service quality based on international students' perspectives.
3. To analyze factors influencing international students' perceptions of service quality at the university health center.
4. To assess the importance and performance of the University of Health Centre based on international students' perspectives.
5. To assess the health and well-being of international students living and studying in Hungary.

3. Methodology

Quality refers to a complex structure of values, beliefs, and attitudes among people who engage with the healthcare system. To capture the intricate relationship between healthcare service quality and patient satisfaction, and to obtain a thorough understanding from the perspective of international students, this research utilizes an exploratory sequential mixed methods design. Data collection for both phases was conducted sequentially. In this design, qualitative data is collected and analyzed prior to quantitative data collection (64–66). The exploratory sequential design is typically applied when the phenomenon under study is not well understood (64–66).

Consequently, the qualitative findings from the first phase informed the questionnaire development used in the second phase (65). The questionnaire was subsequently tested for its effectiveness in the quantitative study. Figure 1. illustrates the study flow employed in this

research.

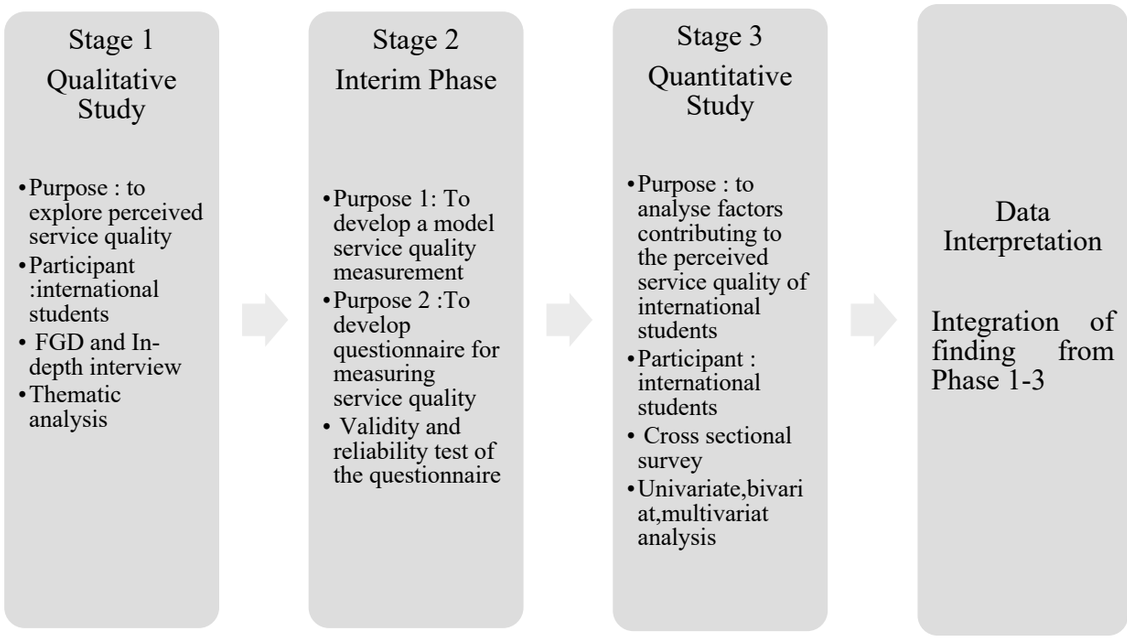

Figure 1. Flowchart of Sequential Mixed Method Design in the study

The research was carried out at the University of Debrecen, focusing on its international student population, encompassing individuals from all academic levels and faculties. According to the university's website, in 2022, over 7,000 international students from more than 120 countries were enrolled. (32).

3.1 Phase 1 - Qualitative Study

Data collection

Data collection involved Focus Group Discussions (FGDs) and in-depth interviews (IDIs), each following structured interview guidelines. While FGDs were conducted online, IDIs took place in person at locations convenient for participants. Data collection occurred between August 14 and September 20, 2022. All sessions were held in English, with audio recordings and detailed note-taking carried out with participants' consent. The FGDs and IDIs examined international students' perceptions of service quality within primary health care.

The guideline was developed based on relevant theories from WHO and several studies (59, 67, 68). It included a series of questions addressing international students' perceptions of their health and well-being, health-seeking behaviors, and definitions of quality in health care services. Each topic was examined using open-ended questions (Appendix 3). The sequence of questions was adapted based on each participant's responses, allowing the researcher to explore additional relevant topics beyond the interview guide when deemed interesting or important.

Prior to data collection, the guidelines were pre-tested with three international volunteer students from various genders and countries to assess the clarity of language and suitability of the questions.

Participants

In this qualitative study, participants were purposively selected using maximum variation sampling to capture a broad range of perspectives, encompassing differences in age, gender, study level, nationality, and faculty. A fixed sample size was not established beforehand; instead, the researcher employed the principle of saturation, continuing to conduct interviews until no new information or insights emerged (69,70). All interviews were audio-recorded, securely stored, and encrypted to maintain the anonymity and confidentiality of the participants. Each individual provided informed consent prior to their participation in the interview and the recording process.

Data Analysis

During this phase, the qualitative data collected from the Focus Group Discussions (FGDs) and in-depth interviews (IDIs) were analyzed using thematic analysis, a process through which the researcher identifies recurring themes within the data. The steps involved in thematic analysis are as follows (71):

1. Data transcription, all the data gained from FGDs and IDI were transcribed verbatim

2. Data familiarisation, all the verbatim transcription needs to be read carefully to provide a better understanding of the study context.

3. The next step is conducting open coding of all data,

4. Following the open coding phase, the analysis proceeded to axial coding, which entails identifying the relationships among the codes and synthesizing them into thematic categories. This process involves recognizing connections between codes and integrating related codes to form a coherent thematic structure,

5. Finally, the analysis culminates in selective coding, which involves selecting and integrating the identified categories into overarching primary themes.

In this study, all interviews were transcribed using a third-party transcription service, subject to appropriate confidentiality provisions. Strategies used in this study to increase the trustworthiness of the research findings included triangulation of sources and peer debriefing with experts in primary health care and quality services (64,66). NVivo 12 Plus, a qualitative data analysis software, was utilised to help organise qualitative data and the data analysis process.

3.2 Phase 2 - Interim Phase

In this phase, the qualitative findings were utilized to construct a model for measuring service quality from the perspective of international students and a questionnaire designed for testing in the subsequent quantitative study. The model and questionnaire underwent refinement following consultations with primary care physicians and healthcare quality experts, who offered valuable insights on both the content and the delivery formats.

Subsequently, the questionnaire was pilot-tested with 30 international students from diverse backgrounds, including variations in gender, age, nationality, and academic level. This was followed by assessments of the questionnaire's validity and reliability. Based on the results of these evaluations, necessary revisions were made to enhance its effectiveness.

The outcomes of the validity and reliability tests, evaluated using the Pearson correlation statistical test (r count > r table or ir-cor more than 0.3) and Cronbach's alpha (greater than 0.6), indicate that the instrument is both valid and reliable, confirming its readiness for distribution.

3.3 Phase 3 - Quantitative Study

Data collection

After the questionnaire was generated in phase 2, the research proceeded with a quantitative study utilizing a cross-sectional survey to identify the factors influencing international students' perceptions of service quality. This study employed both online and offline surveys, created using Google Forms, to enhance participation. The combination of online and offline methods was chosen to mitigate biases associated with common challenges of online surveys, such as low response rates, uneven participant distribution, and participation bias (72). Although recall bias remains a possibility in both formats, including an onsite component was intended to help minimize this issue (72,73).

Furthermore, the University of Debrecen encompasses several campuses situated in various parts of the city, including the Debrecen Main Building, as well as the Böszörményi, Ótemető, and Kassai campuses. In addition to these, the university has campuses located in Nyíregyháza, Hajdúböszörmény, and Szolnok. (32,74–76) As a result, using both online and offline data collection methods boosted the University of Debrecen's reach with international students. The online poll was then circulated to overseas students using social media sites for instance Facebook, Instagram, and WhatsApp. Concurrently, the offline survey was distributed through the University

Health Center and the researchers' networks. Data collection took place between November 15, 2022, and March 8, 2023.

Study Measures

In this phase, the data was obtained employing a self-administered questionnaire. The questionnaire was structured into three sections. The first section included ten questions covering socio-demographic information, such as gender, age, nationality, marital status, level of study, faculty, student status, sponsorship, religion, most recent visit to the University Health Center (UHC), and frequency of UHC visits. The second section contained questions related to statements on service quality and well-being. The final section featured an open-ended question inviting comments on the quality of care provided by the university for international students.

Participants

Using the Raosoft Calculator with a 95% confidence level, a 5% margin of error, and a 50% response distribution (60), the minimum sample size required was determined to be 363 respondents. The eligibility criteria for this study included being an international student at the University of Debrecen, aged ≥ 18 or older, holding active student status, residing in Debrecen for a minimum of three months, and having visited or used the University Health Center (GP Clinic) at least once. Participants, comprising international students from all academic levels at the University of Debrecen, were recruited through convenience sampling.

Data Analysis

Data analysis was conducted using STATA 12.0, with initial data cleaning and editing for accuracy. Descriptive statistics were first calculated to summarize variable distributions, including frequencies, percentages, means, and standard deviations. A bivariate linear regression analysis was then performed to assess preliminary associations between independent and dependent variables, with variables showing p-values < 0.25 nominated as candidates for further analysis. Finally, multiple linear regression was used to identify which independent variables were significantly associated with the dependent variable, with significance determined by p-values < 0.05.

The analysis was then continued by conducting the importance-performance analysis (IPA). This method assessed satisfaction by evaluating two key components, namely importance and performance. Importance is the relevance of the service to the client. Performance is the service provider's effectiveness in delivering it (77). Importance-Performance Analysis (IPA) thus

considered both performance and importance as critical factors in determining customer satisfaction (39). By combining customer ratings on these two dimensions, the analysis offered a comprehensive view of satisfaction and provided management with a clear strategy on where to prioritize resources (41,78,79).

The IPA approach compares an ideal value to the current reality; thus, this method may aid in determining the alignment or divergence between theoretical ideals and practical outcomes. significant investigations revealed that the IPA approach has substantial benefits, including ease of operation, efficiency, and applicability to a variety of industries (39,40,80). The IPA technique has been utilized in the healthcare industry to assess service quality from the patient's perspective in primary care, dental services, hospitals, and medical services (37–39,41,79,81,82).

In its implementation, The IPA technique uses a two-dimensional matrix with Performance as the X-axis and Importance as the Y-axis to categorize service components into four quadrants to determine priorities when allocating limited resources. There are four quadrants in the matrix: Concentrate Here (Q1), Keep Up the Good Work (Q2), Low Priority (Q3), and Possible Overkill (Q4). Martilla and James (77), founders of The IPA approach show how attributes in the four quadrants have various implications for managerial decisions.

1. **Quadrant 1: Concentrate here quadrant**

   In this quadrant, customers (patients) believe that the service or quality characteristic of the services is excellent, but the organisation's (health center) performance is poor.

2. **Quadrant 2: Keep up the good work quadrant**

   This quadrant represents customers (patients) who believe that the service or quality of the services is excellent, and the organisation's (health center) performance is also exceptional.

3. **Quadrant 3: Low priority quadrant**

   In this quadrant, the organisation's (health center) product or service quality characteristic performs poorly, and the customers (patients) perceive it to be of little relevance.

4. **Quadrant 4: Possible overkill quadrant**

   This quadrant shows that the organisation's (health center) product or service quality characteristic performs well, but the customers (patients) perceive it to be of low relevance.

3.4 Ethics Consideration

On April 20, 2022, the Ethics Committee of the Faculty of Medicine at the University of Debrecen approved this study under the code (DE RKEB/IKEB) 6047-2022. This study followed the

principles outlined in the Declaration of Helsinki. Furthermore, there is no risk to study participants, and the study ensures their confidentiality and anonymity. Indirect benefits may significantly boost access and utilization of appropriate healthcare services. Furthermore, participation in both qualitative and quantitative studies was voluntary. For the qualitative study, audio-recorded interviews and transcribed data were encrypted and stored securely. Furthermore, all participants in the qualitative and quantitative investigations provided electronic written informed consent.

4. Results

4.1 Phase 1 Results

This research conducted two (2) FGDs and eight (8) IDIs to explore international students' perspectives on the UHC service quality following their health and well-being. There were sixteen (16) international students involved in this strand. The IDIs and FGDs duration were approximately 50-90 minutes. There are eight males and eight females, mostly (12 students) from Asia, three of them from Africa, and one participant from Latin America. They are studying in master's and doctoral programs. Nine of them are studying in non-health-related faculties, and seven students are from health-related faculties. Table 1. below depicts the socio-demographic characteristics of the qualitative study participants

Table 1. The socio-demographic characteristics of the qualitative study participants

No	Gender	Age	Nationality	Marital Status	Level of Study	Faculty	Student Status	School Fees	Religion	Last Visit to GP
1	Male	31	Indonesia	Married	Master	Engineering	Second Year	Scholarship	Muslim	More than 3 months ago
2	Male	35	Indonesia	Married	PhD	Law	Second Year	Scholarship	Muslim	More than 3 months ago
3	Male	30	Indonesia	Single	Master	Agriculture	Second Year	Scholarship	Muslim	More than 3 months ago
4	Male	23	Indonesia	Single	Master	Mechatronics	Second Year	Scholarship	Christian	Between 1-2 months
5	Male	25	Indonesia	Single	Master	Urban System Engineering	Second Year	Scholarship	Muslim	Less than 1 month
6	Male	26	Indonesia	Single	Master	Agriculture and Food Science	Second Year	Private	Muslim	More than 3 months ago
7	Female	42	Indonesia	Single	PhD	Law	Second Year	Scholarship	Christian	More than 3 months ago
8	Female	27	Indonesia	Single	PhD	Agriculture and Food Science and Environmental Management	Second Year	Scholarship	Muslim	More than 3 months ago
9	Female	28	Nigerian	Single	Master	Faculty of Public Health	Second Year	Scholarship	Christian	More than 3 months ago
10	Female	29	Mexican	In a relations hip	PhD	Molecular Medicine	Third year	Scholarship	Other: Agnostic	Between 1-2 months
11	Female	30	Jordanian	Married	PhD	Faculty of Public Health	Third Year	Scholarship	Muslim	Between 1-2 months
12	Female	29	Sudanese	Single	PhD	Faculty of Medicine	Third Year	Scholarship	Muslim	Less than 1 month
13	Male	32	Ghanaian	Single	PhD	Faculty of Medicine	Second Year	Scholarship	Christian	More than 3 months ago
14	Female	25	Pakistani	Married	PhD	Molecular Medicine	Second Year	Pharmaceut ical Scholarship	Muslim	Between 1-2 months
15	Female	27	Malaysian	Single	Master	Science and Technology	Second Year	Scholarship	Muslim	More than 3 months ago
16	Male	40	Iraqi	Married	PhD	Faculty of Medicine	Second Year	Scholarship	Muslim	More than 3 months ago

4.1.1 Healthcare Service Quality

Analysis of the focus group discussions and in-depth interviews revealed five key themes reflecting participants' views on primary healthcare service quality. According to international students, the university health center should deliver five main attributes of quality healthcare services. The study identified these attributes as essential: Empathy, Equity, Effectiveness, Efficiency, and Safety, or the "4ES."

Figure 2. Thematic Result of Perceived Quality Services

Figure 2. depicts the thematic result of service quality dimensions in the University Health Center (The 4ES's Dimension).

The qualitative study also found several sub-themes related to the service quality dimensions. Regarding empathy, international students pointed out that healthcare workers are required to treat students nicely, show their willingness to listen more and create a comfortable atmosphere during consultations. Below are some quotations from the interviews.

> *"Like, for example, they treat me nice, they smile to show..showing genuine smile .."(IDI_M_3)*

> *"..well in my opinion they have to show a little bit more empathy..we have no family and are far from home and listening to us more .." (FGD_1_M).*

> *"..to some extent I feel not comfortable to discuss about my sickness..I am not feeling comfortable during consultation seems to me they look bit judgemental..maybe just my feeling..but really felt not comfortable.." (IDI_F_5)*

Additionally, regarding the Equity dimension, participants consider that healthcare workers should treat students with dignity and compassion

> *"..after getting the services, I just hope that staff will keep treating Us with dignity and compassion..(IDI_F_1)*

Other participants also stated that it is important for the UHC staff to treat patients equally. Below is a quotation from one such participant.

> *"..just hoping we can get the same treat as domestic students"(FGD_3_M).*

As for the effectiveness dimension, the international student points out that the healthcare staff in the UHC are expected to communicate effectively using proper English so that students can experience better health outcomes and improvements. Enhancing communication, particularly in overcoming language barriers, could help students better understand their care and treatment. Here are some quotes derived from the outcomes of FGDs and IDIs.

> "*So like we sometimes with the ability to speak in English and so we are very clueless.. like what should we go, what should we do, what should they mean?..*".(IDI_F_7)

> *"feels much better after getting examination…the GP really helpful…the lady doctor quite nice.."* (IDI_F_3)

In terms of efficiency, students expressed a desire for easier access to online appointments. The additional availability of healthcare providers to meet demand has become essential to improving service quality in the UHC. Below are some quotes from FGDs and IDIs.

> " *sometimes like somehow difficult to get service from them, because usually not easy to get an appointment*".(FGD_2_M)

> *"..only a few doctors available for international students..causing long waiting times..I cannot wait long because I will have a class.(FGD_1_M)"*

Finally, regarding the safety dimension, two themes emerge from FGDs and IDIs with international students. Participants revealed that healthcare workers in the UHC is expected to clearly explain the purpose of the test and treatment and produce a safe patient experience. Therefore, the students will feel confident with less worry about assessing the services. Below are some quotations depicting the students' thoughts about safety concerns.

> "*the people go get treatment and say, oh your fine.. only pain and he(GP) didn't explain in detail..maybe because of the language barrier (FGD_1_M)*
>
> *".for me, it is important to feel safe when seeking care..cleanliness of the place and the tools use for example. (IDI_9_F)*

Drawing from the focus group discussions, in-depth interviews, and literature review, each dimension is defined as follows:

1. **Empathy**: Reflects the caring and individualized attention that healthcare providers offer to their patients.
2. **Equity**: Refers to healthcare workers ensuring equal treatment for every patient.
3. **Effectiveness**: Involves healthcare providers delivering evidence-based services.
4. **Efficiency**: Indicates the health center's ability to maximize the benefits from available resources.
5. **Safety**: Entails the commitment of the health center and healthcare workers to prevent patient harm and minimize unnecessary risks.

4.1.2 Perspective Well-Being

The qualitative study also explores the international student's perspective on their well-being while studying and living in Hungary. The well-being analysis found main themes with associated subthemes related to the well-being of international students' perspective while they living and studying in Hungary. From data analysis, study participants emphasised that well-being is multi-dimensional. Health and well-being were not simple cases of remaining physically healthy but were linked heavily to balancing mental, social, study environment, and language issues. The main themes depicting well-being from concern over academic life, maintaining health status, social connectedness, and environmental connection. Table 2. describes the themes, sub-themes, and a sample of quotations in detail.

Table 2 .Themes, Sub-themes, and Sample of Quotation

Theme	Sub Themes	Sample of Quotation
Concern over academic life	The quality support from the university	*"There is a better system than my country, you know my country right?... because the infrastructure, the economy and the state situation here are better than mine. That's why I expected that the education system would be much better than in my country" (Informant 8_IDI)*
	Relationship between student with lecturer/supervisor	*"not only concern on a subject that I take but also my cooperation with my professor (supervisor) will affect my well-being as an international student"* (FGD 1_M1)
	Effectiveness of teaching methods	*"..me just hoping that the teacher can deliver the subject more interesting and effective..sometime coz of language barrier it is hard to understand the material..I know my professor so knowledgeable but I just don't understand…" (Informant 2_IDI)*
	Communication with students	*" So means that it would be important for people for every few semesters you have a group discussion with kind of counsellor in the faculty to discuss study progress of Us"* (Informant 1_IDI).
Maintaining health status	Challenging to maintain good diet	*"The food is different from our food, that is the problem. Is not only a problem with the food because our country is different. But religion also, because we are Muslim sometimes difficult to find halal food because we are Muslim, especially for my son" (Informant 8_IDI).*
	Physical activity	*..I tried to keep me physically healthy..nothing special just walking every where..the situation here far better compre to my country if you want walk everywhere. You won't easily get sweat hahah..I don't want to get sick so I tried to be physically active"(FGD2_F1)*
	Concern over mental health	*...and well-being as a student in Debrecen for me is completely physical and mental, not only physical but also mental….and the same mental means academically means that we can go well academically can bring well-being*..(FGD 1_F1).
	Access to health care services	*"If you have a problem it's like any stage when you have a mental health counsellor and education counsellor… mental health student must be checked regularly" (Informant 1_IDI).*
Social Connectedness	Family support	*"family support is really matter, when you studying abroad and you have family to support you during your study it will bring peace..especially when you doing PhD.." (Informat7_IDI)*
	Relation to domestic students	*"For me, it is a bit difficult to make friends with local students, I want to have Hungarian friends but it seems difficult" (Informant 7_IDI)*
	Support from home country counterpart	*"…it gonna be like just like physical health can be also mental health and anything regarding social contact with people ..and being close to friend from the same country and speak the same language really good for my mental health"* (Informant 4_IDI)
	Relation to other international student	*"But also about my mental health if I'm ready to like what I'm studying if I'm good relationships with other international students and local students as well" (FGD 2_M1).*
Environment connection	Finding accommodation	*..first time we arrived we stayed in the hotel for the first time… we tried to find accommodation which was not very easy.. you ask for accommodation they said okay you are married and then you have kids how old are those kids. And with the kids is not easy to find accommodation because they are always concerned about how old your kids are and how destruction the cost to their home (Informant 6_IDI)*
	Access to public transport	*"..it is very easy for you that access grocery. And the transportation is also okay" (Informant 5_IDI)*
	Employment	*"..it's hard to find part time job here..we need extra money to meet our end needs because the scholarship not enough and inflation rate high..it really affect our well-being.."(Informant 8_IDI)*
	Language barrier	*"For me, the highest problem is the language. If we don't know the language there are many things we cannot do and not belong in the community (Informant 2_IDI)*

4.2 Phase 2 Results

Based on the above dimensions, a conceptual framework can be developed to assist the UHC in measuring international students' perceptions of healthcare service quality, which can lead to patient satisfaction.

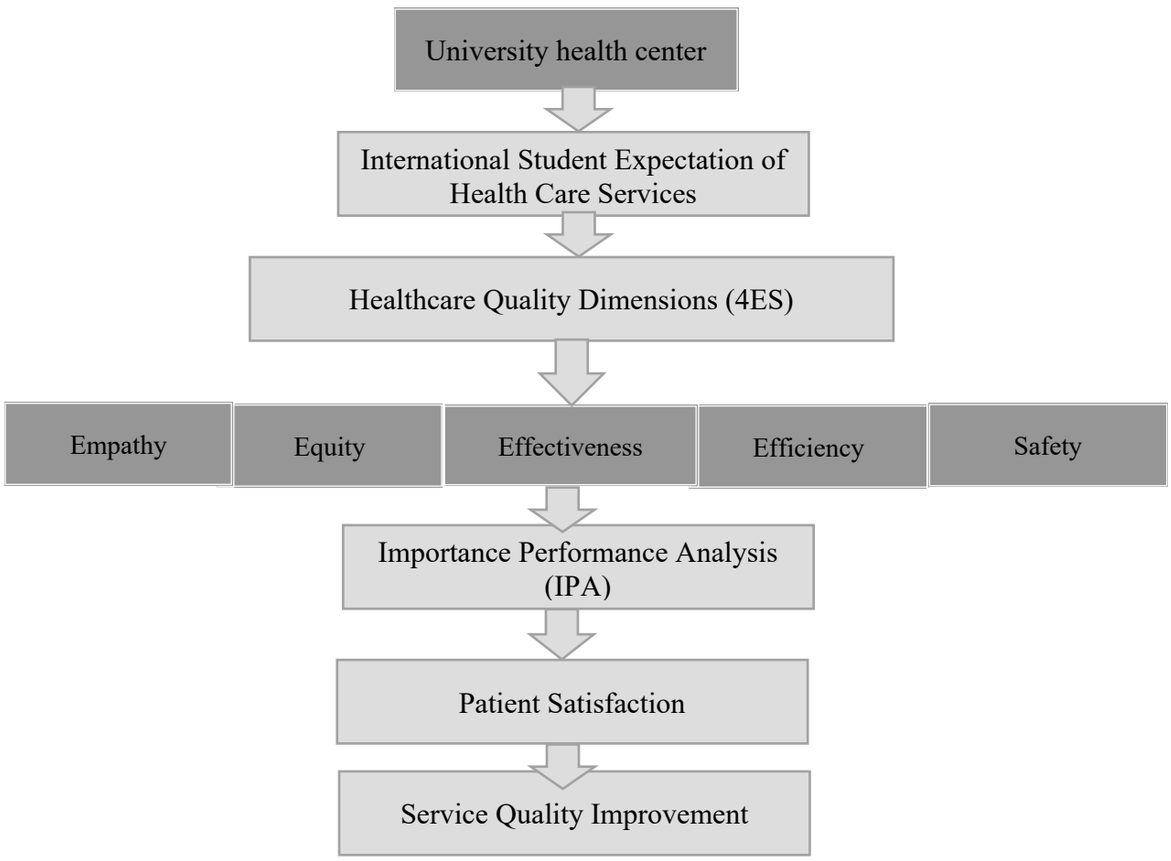

Figure 3. The Framework of Health Care Quality for International Student

Additionally, the findings from the qualitative study informed the development of a questionnaire for the quantitative phase. This questionnaire incorporates the five dimensions of service quality, with items divided into sections measuring the importance and performance of each dimension. The importance and performance questionnaire results were then used to conduct the importance-performance analysis (IPA).

The importance part is the part to describe participants' expectations of services provided by the UHC. It consists of 25 statements incorporating 5 dimensions of service quality. Each item is evaluated using a 5-point Likert-type response (1 = unimportant to 5 = very important).

The performance part is the part to describe students' experiences while assessing the service provided by the UHC. It consists of 25 statements incorporating 5 dimensions of service quality. Each item is evaluated using a 5-point Likert-type response (1 = strongly disagree to 5 = strongly agree). Details of the questionnaire can be seen in Appendix 4.

Furthermore, the qualitative result was also used to develop a questionnaire about well-being. It consists of 25 statements incorporating the four main themes of academic life (six statements), maintaining health status (eight statements), social connectedness (five statements), and environment connection (six statements). Each item is evaluated using a 5-point Likert-type response (1 = strongly disagree to 5 = strongly agree). Details of the questionnaire can be seen in Appendix 4.

Following consultations with primary care physicians, healthcare quality specialists, and well-being experts, the questionnaire was refined based on their content and feedback on delivery style. It was subsequently pilot-tested with 30 international students from diverse backgrounds, including variations in gender, age, nationality, and academic level. The validity and reliability of the questionnaire were then assessed, and revisions were made as needed. Results from the validity and reliability tests, using the Pearson correlation statistical test (r count > r table or ir-cor more than 0.3) and Cronbach's alpha (>0.6), confirmed that the instrument is both valid and reliable, making it ready for distribution.

4.3 Phase 3 Results

4.3.1 Perceived Service Quality

In the cross-sectional survey, 437 international students participated; however, only 402 responses (91.99%) were included in the analysis. Thirty-five responses were excluded because participants did not meet the eligibility criteria or submitted incomplete answers. Table 3 presents the socio-demographic characteristics of the study participants.

Table 3. Study Participants Demographic Characteristics

Variables	n (%)	Min	Max	Mean (SD)	Median (IQR)
Age	402	18	50	23.72 (5.51)	22(6)
Gender					
Male	196 (48.76)				
Female	206 (51.24)				
Nationality					
America	20 (4.98)				
Africa	152 (37.81)				
Asia	209 (51.99)				
Europe	21 (5.22)				
Level of Study					
Bachelor	187 (46.52)				
Master	73 (18.16)				
PhD	53 (13.18)				
1 Tier Degree	64 (15.92)				

Others	25 (6.22)				
Marital Status					
Single	317 (78.86)				
In a relationship	51 (12.69)				
Married	34 (8.45)				
Faculty					
Non health	223 (55.47)				
Health	179 (44.53)				
Student status					
First year	165 (41.04)				
Second years	101 (25.12)				
Third years	60 (14.93)				
Fourth years	26 (6.47)				
Others	50 (12.44)				
Sponsorship					
Self-payment	204 (50.75)				
Scholarship	198 (49.25)				
Religion					
Christian	149 (37.06)				
Muslim	173 (43.03)				
Others	30 (7.46)				
No Religion	50 (12.44)				
Last Visit to the UHC					
Less than 1 month	160 (39.80)				
Between 1-2 months	90 (22.39)				
More than 3 months	152 (37.81)				
Perceived Quality	402	25	125	102.22 (17.51)	103 (26)

From Table 3, we can see the fact that the respondents had a mean age of 23.72 years (SD = 5.51), with ages ranging from 18 to 50 years. Female participants constituted 51.25% of the sample, while 48.76% were male. The majority of respondents were from Asia (51.99%), followed by Africa (37.81%), Europe (5.22%), and America (4.98%). Most participants were bachelor's students (46.52%), unmarried (78.86%), enrolled in non-health-related faculties (55.47%), and in their first year of study (41.04%). Additionally, 50.75% of the participants were self-funded, 43.03% identified as Muslim, and 39.80% reported their last visit to the health center within the past month. The perception dimensions of international students were composed of five attributes based on the 25 statements from the qualitative study. The mean score of the perceived quality attributes is shown in Table 4.

Table 4. The mean score of the perceived quality attribute

Quality Attributes	N	min	max	Mean (SD)	Med (IQR)
Empathy	402	5	25	20.96 (3.70)	21 (6)
Equity	402	5	25	20.63 (3.97)	21 (7)
Effectiveness	402	5	25	19.94 (4.07)	20 (6)
Efficiency	402	5	25	19.57 (4.34)	20 (6)
Safety	402	5	25	21.12 (3.58)	20 (6)

The service quality attribute scores showed that safety received the highest mean score of 21.12 (SD = 3.58), while efficiency had the lowest mean score of 19.57 (SD = 4.34). Internal consistency, measured by Cronbach's Alpha, was calculated for these quality attributes to assess the reliability of international students' perceptions of UHC services, resulting in a strong Cronbach's Alpha value of 0.913. All 25 attributes collectively provided a scoring range from a minimum of 25 to a maximum of 125. Based on the percentage mean score, 143 participants (35.6%) rated the perceived quality of the UHC as good. To identify factors influencing the perceived quality of service at the university health center from the perspective of international students, further analysis was conducted using bivariate and multivariate methods. The result can be seen in Table 5.

The bivariate analysis revealed that several factors were statistically associated with the perceived quality of services. These factors were further examined in a multivariate analysis, which included candidate variables with bivariate p-values < 0.25. The multiple linear regression analysis indicated that PhD students, students from health-related faculties, and scholarship recipients were significantly associated with the perceived quality of healthcare services provided by the University Health Centre (UHC).

The analysis showed that, compared to bachelor's students, PhD students perceived the quality of healthcare services provided by the UHC as lower, suggesting that higher levels of study were associated with a decrease in perceived quality. Similarly, students from health-related faculties reported lower perceptions of service quality compared to those from non-health faculties. Additionally, scholarship recipients had a lower perceived quality of UHC services compared to self-funded students.

Table 5. Factors affecting perceived service quality of international students

Variable	Bivariate analysis				Multivariate analysis			
		95% CI		p_value		95% CI		p_value
	B	lower	upper		B	lower	upper	
Age	-0.29	-0.61	0.02	0.067	-0.24	-0.58	0.10	0.168
Gender								
Male	reff							
Female	-1.68	-5.11	1.75	0.337				
Nationality								
America	reff				reff			
Africa	5.56	-2.64	13.76	0.183	5.85	-2.27	13.97	0.157
Asia	4.88	-3.19	12.95	0.235	5.68	-2.3	13.66	0.162
Europe	3.55	-7.22	14.33	0.517	3.98	-6.61	14.59	0.460
Level of Study								
Bachelor	reff				reff			
Master	-2.09	-6.79	2.61	0.382	-1.2	-5.97	3.58	0.623
PhD	-8.16	-13.47	-2.86	0.003	-5.91	-11.58	-0.23	**0.041**
1 Tier	-5.74	-10.67	-0.81	0.023	-3.42	-9.03	2.19	0.231
Others	-5.79	-13.05	1.45	0.117	-5.69	-13.2	1.82	0.137
Marital Status								
Single	reff				reff			
In a Relationship	2.66	-2.52	7.85	0.313	3.67	-1.66	9.00	0.177
Married	-4.83	-11.02	1.37	0.127	-0.73	-9.72	8.25	0.873
Faculty								
Non-Health	reff				reff			
Health	-4.81	-8.23	-1.38	0.006	-5.38	-9.44	-1.32	**0.010**
Student Status								
First year	reff				reff			
Second Years	-4.63	-8.97	-0.29	0.037	-3.57	-8.15	0.99	0.125
Third Years	-0.51	-5.69	4.67	0.847	-0.02	-5.29	5.24	0.994
Fourth Years	-2.63	-9.89	4.62	0.476	-1.05	-8.44	6.33	0.779
Others	0.34	-5.2	5.89	0.902	4.60	-1.66	10.88	0.149
Sponsorship								
Self-Payment	reff				reff			
Scholarship	-2.88	-6.31	0.54	0.099	-4.49	-8.58	-0.39	**0.032**
Religion								
Christian	reff							
Muslim	-0.15	-4.01	3.71	0.941				
Others	0.38	-6.53	7.29	0.914				
No Religion	0.04	-5.6	5.69	0.988				
Last Visit Time								
Less than 1 month	reff				reff			
Between 1-2 months	-0.67	-5.21	3.86	0.771	-0.08	-4.67	4.50	0.972
More than 3 months	-2.61	-6.51	1.29	0.190	-0.92	-5.34	3.52	0.686

4.3.2 The Importance-Performance Analysis

Data analysis was then continued by conducting the importance and performance analysis. This stage is important to determine international students' expectations and their experience in assessing the UHC services.

Table 6. The Mean ± SD Scores of Importance, Performance and Quality Gaps

Quality Attribute	Importance	Performance	Gap	P-value
Empathy	4.52 ± 0.58	4.19 ± 0.74	- 0.33	<0,0001
Equity	4.52 ± 0.62	4.13 ± 0.79	- 0.39	<0,0001
Effectiveness	4.32 ± 0.65	3.99 ± 0.81	- 0.33	<0,0001
Efficiency	4.31 ± 0.66	3.91 ± 0.87	- 0.40	<0,0001
Safety	4.54 ± 0.56	4.22 ± 0.72	- 0.32	<0,0001

Table 6 indicates negative gaps between importance and performance across all variables (P-value < 0.001). This gap suggests that the University Health Center has opportunities to better align its services with student expectations between student expectations about healthcare quality and University Health Centre performance. From Table 4.6, we can see that the Importance factor ranked safety (4.54 ± 0.56) and efficiency (4.31 ± 0.66) as the most and least important factors to service quality from the international student's perspective. The most significant and lowest mean scores on the Performance component were associated with safety (4.22 ± 0.72) and efficiency (3.91 ± 0.87), respectively. Furthermore, Table 7 provides a detailed examination of the mean scores of sub-attributes of relevance and performance.

Table 7. The Mean ± SD Scores of Service Quality Attribute

No	Quality Attribute	Importance	Performance	Gap	P-value
	Empathy				
1	Health workers listening to you.	4.65 ± 0.61	4.31 ± 0.78	-0.35	<0,0001
2	Health workers help you to feel well so that you can perform your normal daily activities	4.46 ± 0.76	4.13 ± 0.84	-0.32	<0,0001
3	Health care workers tell you what you want to know about your symptoms and illness	4.60 ± 0.67	4.23 ± 0.87	-0.38	<0,0001
4	Health care workers make you feel comfortable during consultation	4.50 ± 0.74	4.24 ± 0.87	-0.27	<0,0001
5	Health care workers involving you in decisions about your medical care	4.41 ± 0.83	4.06 ± 0.97	-0.36	<0,0001
	Equity				
6	Health workers treating every patient exactly the same	4.45 ± 0.92	3.99 ± 1.06	-0.46	<0,0001
7	Health care workers treated with dignity and compassion	4.58 ± 0.72	4.23 ± 0.86	-0.35	<0,0001
8	Health care workers are always willing to help	4.52 ± 0.72	4.19 ± 0.92	-0.33	<0,0001
9	Health care services are affordable	4.53 ± 0.75	4.12 ± 0.96	-0.41	<0,0001
10	Comprehensive service available to all	4.54 ± 0.77	4.09 ± 0.97	-0.45	<0,0001
	Effectiveness				
11	Health workers use effective English in providing care	4.44 ± 0.79	4.08± 1.03	-0.35	<0,0001
12	Health workers knowing what s/he had done or told you during contacts	4.49 ± 0.74	4.15 ± 0.85	-0.34	<0,0001
13	Quick relief of your symptoms after examination	4.18 ± 0.86	3.85 ± 1.00	-0.33	<0,0001
14	A visit to the doctor usually results in an improvement in health	4.24 ± 0.88	3.93 ± 0.95	-0.31	<0,0001
15	My physical and mental state improved after the visit to the doctor	4.24 ± 0.90	3.93 ± 1.01	-0.32	<0,0001
	Efficiency				
16	Getting an appointment to suit you	4.35 ± 0.85	3.91 ± 1.14	-0.45	<0,0001

17	Getting service through digital services	4.13 ± 0.99	3.89 ± 1.03	-0.24	<0,0001
18	Waiting time for examination fast	4.20 ± 0.94	3.71 ± 1.15	-0.49	<0,0001
19	Health workers provide service competently	4.53 ± 0.69	4.15 ± 0.87	-0.38	<0,0001
20	Overall service time in line with expectation	4.38 ± 0.80	3.92 ± 1.02	-0.46	<0,0001
	Safety				
21	Create a safe patient experience	4.62 ± 0.70	4.34 ± 0.80	-0.28	<0,0001
22	Explaining the purpose of tests and treatments	4.50 ± 0.74	4.15 ± 0.94	-0.35	<0,0001
23	The center insists on error-free record	4.43 ± 0.80	4.08 ± 0.89	-0.34	<0,0001
24	Medical devices use in the center	4.51 ± 0.70	4.18 ± 0.83	-0.33	<0,0001
25	Keeping your records and data confidential	4.68 ± 0.61	4.37 ± 0.75	-0.31	<0,0001

From Table 7 we can see the breakdown and the highest negative gap of each dimension (highlighted in grey). In the empathy dimension, the highest negative gap is "healthcare workers tell you what you want to know about your symptoms and illness" with -0.38. From the Equity dimension, we can see that “Health workers treat every patient exactly the same” statement has the greatest negative disparity with -0.46. Furthermore, in the Effectiveness category statement “Health workers use effective English” in providing care had the largest negative gap with -0.35. Furthermore, in the Efficiency dimension, "Waiting time for examination fast" has a negative gap of -0.49, and finally in the Safety dimension, the statement "Explaining the purpose of tests and treatments" has the largest negative gap of -0.35.

After defining the gaps between importance and performance across all variables, the next stage in analysis is to run the IPA matrix. The matrix was created after evaluating the importance and performance scores of each quality dimension and characteristic (Figure 4).

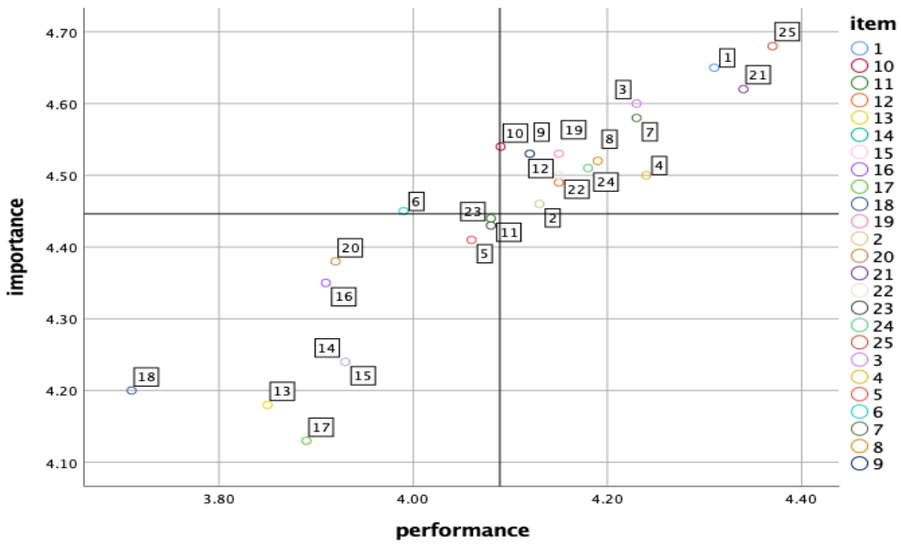

Figure 4. The Importance-Performance Matrix

As can be seen from Figure 4, the IPA matrix demonstrates that quadrant I or the concentrate here quadrant gathered a single quality attribute for international students namely "Health Workers

treating every patient exactly the same" or item no. 6. This finding suggests that according to the international student, the equity trait in treating patients equally is important but performs poorly. This item has to be a top priority for the UHC to improve service quality. From quadrant II or the Keep up the good work quadrant, international students highlighted 13 features that may be regarded satisfactory in addressing their expectations namely three empathy items (item number 1, 3, 4), four equity items (item number 7, 8, 9, 10), one effectiveness-item (item number 12), one efficiency item (item number 19)and four safety-items (item number 21, 22, 24, 25).

Furthermore, international students identified there are eight traits in quadrant III or the low-priority quadrant namely: one item in the Empathy part (item number 5), three items in Effectiveness (item numbers 13, 14, 15), and four items in Efficiency part (item number16, 17, 18, 20). This means that categories in which health centres do well, yet international students regard them as less significant than other characteristics. Lastly, in the Possible Overkill quadrant (quadrant IV), this study identifies two traits (items number 2 and 11) that international student's rate poorly. The IPA matrix also suggested that there is one item ("The centre insists on an error-free record") on the boundary of quadrants 1 and 3, which could be improved. To support the findings from the IPA matrix, this study conducted a qualitative analysis of the questionnaire's free-text responses to support the IPA finding. The thematic analysis of free-text replies revealed two major themes and several sub-themes. According to international students, the UHC can increase service quality by prioritizing human resources and its services.

From the human resources theme, the students suggested that health workers should enhance their communication skills, enhance their affective behavior, and increase the number of health workers in the UHC, especially the GP. As for the services, students stated that the number of appointments, access to services, and treatments are critical for future directions. Figure 5 briefly describes how themes were recognized and related to one another.

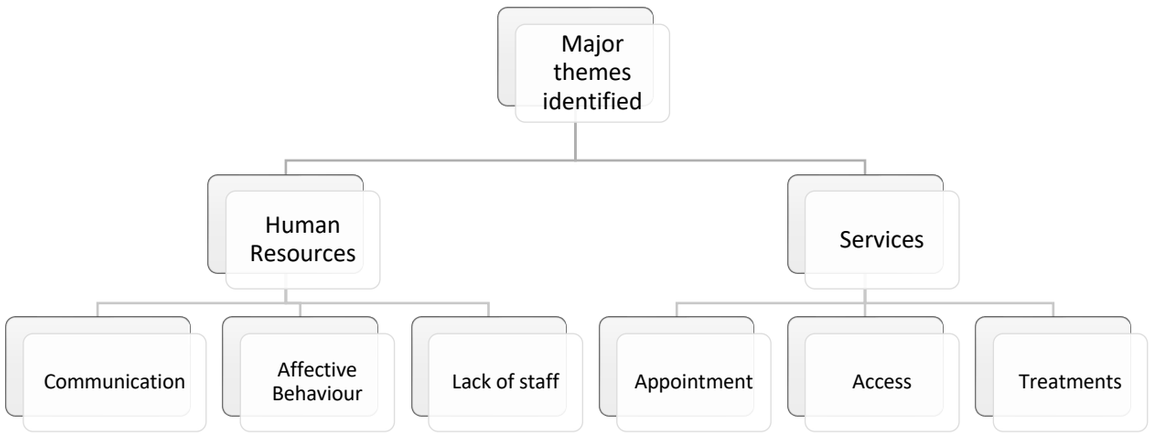

Figure 5. Free Text Theme and Sub-themes

According to study participants, human resources have become essential in improving quality services at the UHC. This is because the UHC is a healthcare provider that encounters and treats diverse patients from different nationalities; therefore, there is a need for health workers to communicate effectively. International students pointed out that enhancing communication, particularly in overcoming language barriers, could help students better understand their care and treatment. In addition, students added that providing good interaction between patients and health workers was also crucial for international students concerning the quality of health care services. International students also stated that the UHC staff is expected to improve their affective behaviour skills. Affective behaviour, in this sense, can be defined as the ability of health workers to show empathy and respect during communication with patients while seeking care. Students suggested fostering a more open and empathetic approach during consultations could enhance their comfort and experience. Affective behaviour will contribute to the patient's impression of the center. As a result, it could affect patient treatment and outcomes.

Apart from communication and affective behaviour, some international students also suggest that the UHC needs more doctors to provide its services. The lack of doctors in the center has directly affected the services provided by the UHC, such as late appointments and long waiting times. The University of Debrecen has more than 7,000 international students, so it needs a sufficient number of GPs to provide fast services and reduce long waiting times.

In addition to the above findings, international students revealed that appointment problems, access, and services are also the remaining issues that need to be taken into consideration by the UHC. Firstly, a long time to get an appointment through an online system provided by the UHC might hinder students from seeking care. Secondly, the students expected the UHC to improve

their mental health services and care access. Thirdly, the students wish the UHC could provide 24-hour care and be open during the weekend, as students might get sick late at night. Some students pointed out that it would be beneficial if the UHC could provide them with access to their electronic medical records. This access makes it easy for students to maintain their health status. Lastly, the international students expect that the UHC staff will provide them with a thorough examination. According to the students, a thorough examination highly correlates with the communication aspect of healthcare workers. The UHC staff are expected to give them detailed explanations of their conditions, the purpose of tests and treatments, and referrals. Providing more detailed and accessible information about available healthcare services may help students navigate the system more effectively. Table 8. below depicts the example of the free-text quote in detail.

Table 8. Free-text quotations

Themes	Sub-themes	Example Quotation
Human Resources	Communication (language barrier and creating good communication)	*"The language barrier sometimes makes it difficult (Student_offline_87)* *Making the health workers speak the basics English at least, and explain how the TAJ card helps us because until now, I do not know when it is useful or not…(Student_online_55)* *Healthcare quality could be better by conducting more research when a patient has a problem. Most of the time, not enough measures are taken to ensure a patient is cured (Student_offline_50)* *The quality provided by the university health centre is adequate enough to alleviate a patient's symptoms, but interaction with the international student has proved quite problematic … (Student_offline_65)*
	Affective behaviour	*Equitable Treatment and respect, most importantly, more empathetic staff required with better English skills (student_online_48)* *I hope health workers tell us more detail about our symptoms and illness and also treat the patients with dignity and compassion (student_online_15)*
	Lack of Staff	*The amount of doctors available for international students it's too low for the number of students, which leads to late appointments (Student_offline_105)* *More international doctors who understand the situation (Student_online_117)*
Services	Appointment	*The quality of health care provided is good; however, at times, making online appointments for certain health conditions is tricky because it takes so long(student_offline-19)* *The care is good, but getting an appointment close enough is a big problem. Imagine you broke your leg (sprain or fracture), and the GP gives you an appointment for 2 months not good (student_offline_33)*
	Access	*I believe mental health awareness campaigns should be effective, and consultation services must be better (Student_online_11).* *If the centre gives a function 24 hours a week, it is better for students (Student_offline_69).*

		I would require them to provide student access to the website where they can check their health and previous records and tests…. (Student_offline_6)
	Treatment	*[The GP] should inform the patient about the exact disease instead of only giving medicines (Student_offline_150)* *In general, it's okay for me, just that sometimes the examination can feel rushed, and some symptoms may be forgotten. Also, when referred somewhere like a department, it is hard to find [the place] (Student_offline_17)*

4.3.3 Perceived Well-Being

This research also seeks to find out international students' perceptions about their well-being while studying and living in Hungary. The findings will contribute to a better understanding of the student's perspective and provide better support and care for international students. Based on the result of the filled questionnaire. There are several important findings related to the well-being of international students. Table 9. shows the descriptive results of the indicators of the perceived well-being of international students.

Table 9. The mean score of the perceived well-being of international students

Perceived Well-Being	N	min	max	Mean (SD)	Med (IQR)
Academic Life	402	6	30	23.21 (4.81)	24 (7)
Health Status	402	8	40	31.36 (6.07)	32 (8)
Social Connectedness	402	5	25	19.52 (3.59)	20 (5)
Connection to Environment	402	6	30	22.02 (3.82)	22 (4)

From Table 9 we can see the fact that the academic life indicator comprising 6 statements has a minimum score of 6 and a maximum of 30 with a median value of 24 and an average of 23.21. The median value of 24 means that all respondents agree that academic life is in good condition. In terms of health status which consists of 8 statements, the minimum score of 8 and a maximum of 40 with a median value of 32 and an average of 31.36 indicates that all respondents agree that their health status is in good and pleasant condition. Additionally, for social connectedness indicator which consists of 5 statements has a minimum score of 5 and a maximum of 25 with a median value of 20 and an average of 19.52 indicating that all respondents agree that the social connectedness of study participants is relatively good. Finally, the environment connection with 6 statements has a minimum score of 6 and a maximum of 30 with a median value of 22 and an average of 22.02 suggesting that all respondents agree that their connection to the environment condition is relatively easy to maintain.

Further analysis was conducted to better understand what factors are related to international students' well-being as shown in Table 10.

Table 10. Factors affecting international students' perception of well-being

Variable	Bivariate analysis				Multivariate analysis			
		95% CI		p_value		95% CI		p_value
	B	lower	upper		B	lower	upper	
Age	-0.12	-0.39	0.14	0.362				
Gender								
Male	Reff				Reff			
Female	-3.17	-6.08	-0.27	0.032	-3.26	-6.60	-0.27	0.056
Nationality								
America	Reff				reff			
Africa	5.98	-0.94	12.90	0.090	6.18	-0.71	13.07	0.157
Asia	5.01	-1.80	11.83	0.149	5.98	-0.82	12.78	0.162
Europe	11.38	1.43	21.33	0.025	10.93	1.08	20.78	0.460
Level of Study								
Bachelor	Reff							
Master	-2.06	-6.09	1.98	0.318				
PhD	-0.47	-5.03	4.08	0.839				
Others	-1.29	-5.07	2.47	0.499				
Marital Status								
Single	Reff							
In a Relationship	0.13	-4.29	4.55	0.953				
Married	-0.37	-5.66	4.91	0.889				
Faculty								
Health*	Reff				reff			
Non-Health**	2.90	-0.02	5.83	0.052	**4.12**	0.82	7.43	**0.015**
Student Status								
First year	reff				reff			
Second Years	-3.92	-7.59	-0.24	0.037	-2.92	-6.77	0.95	0.139
Third Years	-4.99	-9.38	-0.61	0.026	**-4.70**	-9.07	-0.32	**0.035**
Fourth Years	-4.54	-10.67	1.60	0.147	-3.48	-9.63	2.66	0.266
Others	-1.57	-6.26	3.13	0.513	-0.87	-5.68	3.94	0.723
Sponsorship								
Self-Payment	reff				reff			
Scholarship	-2.89	-5.80	0.01	0.051	-3.26	-6.60	0.08	0.056
Religion								
Christian	reff							
Muslim	-0.73	-4.01	2.54	0.660				
Others	-0.87	-6.74	4.99	0.769				
No Religion	-0.28	-5.07	4.51	0.907				

*Health-related faculties include healthcare students studying medicine, nursing, dentistry, and public health.
**Non-healthcare-related faculties include for instance economics and business, education, agriculture, etc.

Table 4.10 shows the results of bivariate analysis that gender, nationality, and student status have a relationship with well-being with $p < 0.05$. Furthermore, multivariate analysis using a limit of $p<0.25$ suggested that when the variables of gender, nationality, student status, faculty, and sponsorship are included in the analysis, only faculty and student status significantly affect well-

being. Multivariate results also show that respondents from non-health-related faculties have four times the chance to experience an increase in well-being compared to respondents in the health-related faculty. Additionally, students in the third year have a lower chance of experiencing an increase in well-being compared to first-year students.

5. Discussion

This research highlights a significant yet underexplored issue concerning the quality of healthcare services available to international students in Hungary and its impact on their well-being during their studies and residence there. The exploratory sequential mixed method used primary data from a mixed method data collection and analysis.

5.1 Healthcare Service Quality

Understanding patient experience is essential for healthcare organizations, as it is widely acknowledged as a fundamental quality component. It plays a critical role, particularly in strengthening competitive growth strategies within healthcare organizations. (25,83). Moreover, delivering patient-centered care has become fundamental to achieving high-quality healthcare (29,83). Numerous studies indicate that a positive patient experience enhances health outcomes, fosters patient loyalty, and increases satisfaction (83,84). Investigating the attributes that contribute to international students' perceived quality of healthcare is essential, given their diverse backgrounds and cultural differences. The qualitative study identified five primary attributes associated with perceived quality among international students accessing the UHC: Empathy, Equity, Effectiveness, Efficiency, and Safety (4ES). These findings may complement existing quality indicators in the healthcare sector, which typically focus on the general population, such as the SERVQUAL, HEALTHQUAL, PubHosQual, HospitalQual models, and the Primary Care Assessment Tool. (61,85). Additionally, this research can offer insights into how healthcare services can better meet international students' expectations regarding service quality.

The study revealed that Safety received the highest quality attribute score for UHC services, indicating that international students feel that the safety standards and procedures at the UHC meet their expectations. Within the six pillars of high-quality care, safety signifies providing high-quality care that prevents avoidable patient harm (86). The UHC appears dedicated to maintaining high patient safety standards for international students. This commitment aligns with the WHO's agenda, emphasizing that primary healthcare providers should prioritize patient safety. (73,87). This emphasis is due to patient safety being a central attribute of healthcare quality within primary

healthcare settings (73,88). The quantitative study also indicated that service efficiency at the UHC received the lowest rating among international students. This suggests that students perceive efficiency as falling below their expectations, particularly regarding the availability of appointments with general practitioners. Efficiency in healthcare delivery pertains to the prompt supply and provision of services, especially for vulnerable populations(89). According to the findings of the qualitative study, international students reported difficulties securing appointments with general practitioners within the UHC system, which often led to prolonged waiting times. This finding is consistent with the results of various studies that indicated patients expressed the lowest satisfaction levels regarding extended waiting periods (17,90,91). These delays may discourage students from seeking medical care, particularly when they are engaged with academic responsibilities and fully dedicated to their studies. (22,43,92). Consequently, this may prompt students to take self-care measures or pursue alternative remedies (17,18,22,92).

Our study revealed a significant correlation between PhD students and their perceptions of the quality of healthcare services at the University Health Centre. This association may be attributed to the extended duration of PhD studies and the greater academic demands placed on these students compared to those in bachelor's or master's programs. Research indicates that the substantial academic pressure faced by PhD students may contribute to the onset of common psychiatric disorders, particularly depression (93). This situation may increase the demand for healthcare services among PhD students. Additionally, students enrolled in health-related disciplines demonstrated a significant association with their perceptions of the quality of healthcare services offered by the University Health Centre. This could be attributed to their relatively higher awareness of healthcare issues, which enables them to better comprehend the available healthcare services compared to their peers in non-health-related fields (94).

Moreover, international students who receive scholarships exhibited a significant association with their perceptions of the quality of health care services. Students with Hungarian Governmental Scholarships are eligible for a Hungarian Social Security card, which grants these international students access to health care services on par with those available to local Hungarian citizens. (33,95). Conversely, self-sponsored students are required to obtain a combined health and travel insurance policy, which is incorporated into their tuition fees. (33). These varying types of health insurance may influence international students' perceptions of health care quality. Scholarship students who possess Hungarian social security cards benefit from a broad array of options for

accessing health care services, as this card is valid for all health care services available to insured Hungarian citizens.

To understand service quality and patient satisfaction, it is crucial to measure service quality by comparing the perception of expected service with the service received and perceived by customers (37,38). Studies suggested that to determine where there is a discrepancy between expected and perceived service quality, and healthcare professionals should examine consumer feedback as a means of enhancing quality, as well as evaluate how patients felt about their experiences receiving medical treatment and how they regarded the level of care they received (39–42). Understanding the gap between expectations and perceptions could assist in illuminating the background of service excellence. As mentioned earlier, the IPA matrix is used to measure the gap between international student expectations and performance on service quality so that the UHC management can use the result to identify areas for improvement. This is because IPA assesses both strengths (keep up the good work) and potential drawbacks (concentrate here) (40,81). The IPA results are expected to offer a more realistic knowledge of prioritizing goals to improve the service quality of university health centers and an evidence-based plan for program creation (37,41,82).

According to our findings, there is an unmet need regarding student expectations and university health center performance. The University Health Center has opportunities to better align its services with student expectations, particularly regarding efficiency and equitable treatment. The result of this study is consistent with several published studies in hospitals and medical centers (37,38,78). However, it is essential to note that ideal situations, defined by perfection or optimality, are frequently difficult to achieve in practice. Realizing and understanding that achieving ideal conditions is frequently a complex and multifaceted endeavor is crucial. The ideal condition is subject to a variety of real-world constraints and limitations.

Although this study discovered a significant negative gap, the health center's service quality is recognized as strong compared to some other contexts, with opportunities to address particular unmet needs for further enhancement. Its findings are superior to other studies conducted in healthcare settings in several countries, including Brazil (39) and Iran (38,41,79). This indicates that the University Health Center provides better service than international providers. However, it is critical to note that the difference appears due to different target populations and the attributes used in the importance and performance component analysis.

From the IPA analysis, this study also discovered that the highest and lowest values of the importance and performance factors were related to the safety and efficiency dimensions. This finding means that the center was very committed to ensuring high patient safety standards for international students. Patient safety is critical to primary care service quality (73,88). Maintaining consistently high cleanliness and safety standards is vital to ensuring a positive experience for all students.

On the other hand, efficiency remains a significant issue in the UHC. It can be seen from the results that examination waiting times have become the most prominent negative gap in the efficiency dimension, which may affect international student satisfaction with the service provided by the center. Long waiting times might be due to a lack of staff. According to the qualitative findings, a lack of staff, particularly the availability of GPs, may cause a delay in providing health services to students. This finding is supported by the lack of GPs, which is not limited to Hungarian primary health care. The GP shortage remains a significant issue throughout Europe. Several studies found that Europe's GP shortage may contribute to the primary care workforce crisis (96–98). Additionally, a study in Hungary found a significant decrease in GPs across all practices (98).

According to IPA analysis, the "Concentrate Here" quadrant (Q1) captured a single attribute for international students: "Health Workers treating every patient exactly the same" (item no. 6). This means that international students place a high value on equity in treating patients fairly, but perform poorly. This could refer to different cultural backgrounds. International students in Hungary encounter various new experiences and cultures that differ significantly from their home country. Several studies indicate that international students expect medical staff to treat them fairly regardless of their backgrounds (5,6,22). On the contrary, host country healthcare providers face difficulties in providing healthcare to international students due to language barriers, cultural differences, and limited resources (6,99).

5.2 Perceived Well-Being

In this study, variables on the health and well-being of foreign students enrolled at Hungarian universities are investigated and identified. The outcome clarified and expanded upon the experiences of being an international student in Hungary, enabling Hungarian higher education establishments to better comprehend the obstacles faced by international students and the potential hazards to their health and well-being. We revealed that survey participants described well-being as multi-dimensional based on the qualitative results. This result is consistent with a study

conducted in the Netherlands, where college students identified several variables that affect their well-being (100). According to survey participants, academic priorities, preserving physical and mental health, social connections, and environmental connections are all aspects of well-being.

The desire to find better educational opportunities is regarded as an important concern when students decide to study abroad. International students' academic success will be impacted by their academic well-being, which includes their academic life, surroundings, support, and adjustment (101,102). In order to help students easily adjust to transition stress and shock, which may contribute to academic procrastination, it is crucial that the university, along with academic staff, psychologists, and other specialists, accompany and adapt students to new environments and reality (4,7,19,20,103). For this reason, adjusting to a university setting is essential to academic success.

Acculturative stress, which can result in anxiety and depression, may be brought on by challenges adjusting to the environment of the host nation (14,15). The mental well-being of students is seen to be crucial to the quality of education. Because they move to a new country and have to adjust to intercultural interactions, depression is the most prevalent mental health issue that arises among international students. To resolve such disputes, they must adjust (13,93,104,105). Symptoms of mental illness may arise from acculturative stress. Social support is one of the things that could shield overseas students from these detrimental consequences (49,105,106).

According to certain models, social connection is a key component of social support (91–93). In addition, increasing social support from a particular group of people, such as friends or family, can strengthen students and help improve their mental health conditions (49,107). International students who have a large network of friends with people in the host country will feel more satisfied and socially connected (49). It's crucial to have supportive social ties, and acceptance and connection are both necessary for one to feel like they belong (105,108).

Additionally, our quantitative investigation revealed that conditions for the well-being of international students at the University of Debrecen were generally favorable. In contrast to students from health-related colleges, students from non-health-related faculties may see an increase in well-being. The reason for this could be that compared to other training, health-related courses are more stressful (109–111). Several research has indicated that during their professional phases, nursing and medical students encounter elevated levels of stress (111,112). Stress can

harm education by causing burnout (109,113), suicidal ideation, and even suicide in medical students (109).

The quantitative analysis also discovered that third-year students are less likely to experience an increase in well-being than first-year students. This tendency could be attributed to increased stress as a final-year student. Several studies have found that depression levels are highest in a student's final year of school (100,101). Final-year students in Canada have alarmingly high rates of anxiety and depression because they will no longer be able to access campus-based mental health services and will confront numerous additional stresses as a result of significant life transitions (114).

5.3 Strengths and Limitations

Study findings have several practical consequences for those active in foreign student relations in Hungary. This is because the study's findings may help policymakers, educators, and actors concerned with international student affairs identify relevant and potentially successful approaches for each aspect of foreign students' well-being in Hungary. Additionally, the findings of the study can aid decision-makers in identifying the strengths and weaknesses of various quality dimensions through importance-performance analysis. These insights may further enable decision-makers to improve service quality and patient satisfaction by concentrating on the perceptions of service recipients. Ultimately, this research could also assist healthcare professionals in understanding patients' attitudes and expectations, particularly those arising from diverse cultural backgrounds.

While this study generated valuable findings, it is not without limitations. First, the sample and data were exclusively drawn from international students at a single university, which may limit the generalizability of both qualitative and quantitative results regarding the perceived quality and well-being of international students. Second, international students may have insufficient information about the healthcare services offered by the University Health Centre (UHC), leading to a lack of awareness and health literacy that could result in inaccurate assessments of service quality. Additionally, using a scale of 1 to 5 may be inadequate for capturing the complexity of respondents' opinions. There may also be a bias among participants, as dissatisfied patients are more likely to complete evaluations than satisfied ones, potentially skewing perceptions of healthcare service quality. Finally, the reliance on self-reported data in the quantitative study could introduce respondent bias.

To achieve more generalizable results, future research could replicate these findings in different settings and consider including a broader range of perspectives, such as institutional perspectives and actors involved in international student affairs, to provide a more complete understanding of international students' well-being. Furthermore, future studies on measuring service quality could include the perspectives of healthcare workers and management to acquire a better understanding of the perceived quality of healthcare services.

5.4 Conclusions

From this study, there are several conclusions can be drawn:

5.4.1 The study discovered five characteristics that could be used to improve healthcare services for international students. Patient safety is the most important aspect of perceived quality among international students at the University Health Centre. Furthermore, being a Ph.D. student, studying in health-related institutions, and receiving a scholarship indicated the perceived quality of overseas students. As a result, the UHC administration and the university must increase the quality of services. Improvements must take into account the range of socio-demographic factors among international students. This would assist address the numerous challenges that international students encounter, particularly the disparities in primary care services and healthcare systems caused by social, historical, economic, and cultural reasons.

5.4.2 Through the application of an Importance-Performance Analysis (IPA) matrix, significant areas for improvement in the selected university health center's services were identified based on the expectations of international students. The importance-performance analysis offers critical insights into international students' feedback regarding the quality of services provided at the university health facility. It highlights the necessity for improvements and the reduction of importance-performance gaps, especially concerning the efficiency component. Decision-makers can leverage the results of the IPA analysis to allocate limited resources more effectively, concentrating on potential organizational weaknesses to inform future strategic directions.

5.4.3 International students believe that well-being has multiple dimensions. Well-being is linked to academic performance, health, social connections, and environmental stewardship. Furthermore, the quantitative research discovered that when gender, nationality, student status, faculty, and sponsorship were considered, only faculty and

student status had a substantial impact on well-being. As a result, foreign students from non-health faculties are more likely to embrace improved well-being than their counterparts from health-related universities. Senior students are less likely to experience a rise in well-being than first-year students. Thus, it would be effective for the University and other stakeholders involved in foreign student affairs to explore improved pre-arrival strategies that take into account the diversity of international students' socio-demographic features. Peer assistance from students from the same country or who have already finished the same course will improve the well-being of international students.

5.5 New Contribution to Academic Knowledge

This present study promotes several new contributions to improve international students' well-being while living and studying in Hungary.

5.5.1 Study 1 title: International Students 'Perceived Quality of University Health Center Services: An Exploratory Sequential Mixed Methods Study.

The study found the Empathy, Equity, Effectiveness, Efficiency, and Safety (4ES) Dimension to be considered a service quality indicator in the healthcare sector targeting a unique population. Additionally, the questionnaire developed from the qualitative study enriches the body of knowledge on the measurement of healthcare service quality in university healthcare settings.

5.5.2 Study 2 title: Understanding International Students 'Perspective of Health Service Quality: A Cross-Sectional Study in a Hungarian University.

The study provides unique insights into international students' perceptions of healthcare services, particularly in a university setting. Novelty is found in the application of the Importance-Performance Analysis (IPA) method and thematic analysis of qualitative data to prioritize service quality dimensions and understand students' perspectives comprehensively

5.5.3 Study 3 title: Exploratory Sequential Mixed-Method Study to Understand International Student's Perspective of Well-Being.

The study presented new findings about indicators of international students' well-being namely: academic life, health, social connectedness, and environmental connection. In addition, the questionnaire developed from the qualitative study enriches the body of knowledge on the measurement of well-being for international students.

6. Summary

This thesis explores the perceived quality of healthcare services and the overall well-being of international students residing and studying in Debrecen, Hungary. In recent years, Hungary has emerged as a popular destination for international students, with a notable increase in their numbers following the introduction of the Stipendium Hungaricum, a government scholarship program. The existing literature suggests that international students often experience varying degrees of physical and psychological adjustment due to their transition to a new environment, which can significantly impact their overall well-being.

According to studies, overseas students are more likely to have poor mental health, which is exacerbated by separation from family and culture, language obstacles, financial hardship, and academic obligations. To enable overseas students to complete their degrees and reach their desired level of achievement and performance, the university will need to support them in a variety of ways including providing and improving access to high-quality healthcare services.

The findings of this study may assist decision-makers in identifying the well-being of international students by identifying their attitudes toward health and well-being, as well as their perceptions of the quality of healthcare services. It will also improve comprehension of the strengths and weaknesses of service quality as determined by importance and performance analysis. The findings can also help decision-makers improve service quality and student satisfaction by concentrating on service users' perspectives. Finally, it may assist healthcare management in better understanding patient attitudes and expectations from various cultural backgrounds.

This thesis resulted in three publications. The first publication of the study identified five major themes that reflect the participants' perceptions of service quality within the university healthcare context. The perceived quality attributes highlighted in this research included Empathy, Equity, Effectiveness, Efficiency, and Safety. Notably, only 35.57% of participants rated the perceived quality of the university health center as good. The service quality attributes demonstrated the highest and lowest scores in relation to Safety and Efficiency, with mean scores of 21.12 ± 3.58 and 19.57 ± 4.34, respectively. Furthermore, the multiple linear regression analysis indicated that PhD students from health-related faculties and scholarship recipients were significantly associated with their perceptions of the quality of healthcare services.

The second article identified negative gaps between the importance and performance of service quality across all dimensions (P-value < 0.001), indicating an unmet need concerning student

expectations and the performance of the university health center. In terms of the Importance factor, the highest and lowest scores were associated with the dimensions of Safety (4.54 ± 0.56) and Efficiency (4.31 ± 0.66), respectively. Similarly, the Performance factor also reflected the highest and lowest mean scores related to Safety (4.22 ± 0.72) and Efficiency (3.91 ± 0.87). Additionally, the qualitative analysis revealed two major themes and several secondary themes that emerged from the thematic analysis of free-text responses. This thematic analysis of qualitative data offers a thorough understanding of the service quality dimensions and provides comprehensive insights into students' perspectives.

The third article found four main themes depicting international students' perception of well-being: perceived well-being identified, namely, academic life, health, social connectedness, and environmental connection. The quantitative study suggests faculty and student status significantly affect international students' well-being. Thus, it would be crucial for the University leaders and actors involved in international student affairs to consider enhancing pre-arrival plans for international students, considering the diversity of international students' students' socio-demographic characteristics.

Author's Contribution:

The Author has contributed with other co-authors in the following:

A. Study 1 title: International Students 'Perceived Quality of University Health Center Services: An Exploratory Sequential Mixed Methods Study.

   Conceptualization, methodology, data collection, formal analysis, data curation, and writing – original draft, review and editing.

B. Study 2 title: Understanding International Students 'Perspective of Health Service Quality: A Cross-Sectional Study in a Hungarian University.

   Conceptualization, methodology, data collection, formal analysis, data curation, and writing – original draft, review and editing.

C. Study 3 title: Exploratory Sequential Mixed-Method Study to Understand International Student's Perspective of Well-Being.

   Conceptualization, methodology, data collection, formal analysis, data curation, and writing – original draft, review and editing.

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List of publications related to the dissertation

1. **Indrayathi, P. A.**, Januraga, P. P., Ulandari, L. P. S., Pradnyani, P. E., Ramadhan Makame, K., Elehamer, N. M. K., Hilal, S., Kirshbaum, M., Kolozsvári, L. R.: International students' perceived quality of university health centre services: an exploratory sequential mixed methods study.
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Putu Ayu Indrayathi

10. Appendix

Appendix 1. Study Information to participants

Internationalisation has led to higher education (HE) 's role in supporting Hungary's national economy. Higher education has created massive transformations and reforms to enable universities to meet the increasingly growing demands for information and knowledge. In the Hungarian context, the internationalisation of higher education has attracted enormous numbers of international students worldwide to continue their studies at all levels. The number of international students in Hungarian universities and colleges is 38,422 in the 2019/2020 academic year. Most were in Budapest and the universities of Debrecen, Szeged, and Pecs.

Several research studies found that university students face multiple stressors, such as academic work, employment, finances, housing, relationships, etc. For international students, it is even more complex. Studies have shown that international students are at increased risk of experiencing poor

mental health, isolation from families and culture, language barriers, financial stress and academic pressures. The university needs to support international students to improve their achievement and performance. One of the supports required by international students is the availability of health care services.
As a result, improving the quality of services to meet international students' requirements, including health care services, is essential. One of the most critical issues in the comprehensive quality system of universities, especially international universities, is the quality of healthcare services and the satisfaction derived from these services by students from different nationalities. Quality of health care has a direct correlation to satisfaction. Patient satisfaction is one objective of care that represents the patient's judgement of the quality of health care services. Measurement and understanding of the patient, caregiver, and family experience of healthcare provide the opportunity for reflection and improvement of care and patient outcomes. Studies regarding perceived quality of health care and satisfaction mainly focus on patients' perspectives, and very few studies investigated this among international students. This might be due to the good services offered by universities to support international students. The healthcare issue is one of the challenges international students face when adapting to the host country; it might affect their adjustment and academic performance. As one of the host universities in Hungary with international students, the University of Debrecen provides care for international students. Around 6,297 students worldwide are studying at the University of Debrecen. This study seeks to identify student expectations and perceptions of healthcare service and the level of satisfaction.

The Department of Health Family Medicine and Occupational Health, Faculty of Medicine, University of Debrecen, Hungary, is currently conducting research: Assessment of International Student perceived service quality of primary care. We know that international students face many challenges in their studies and adjusting to life in Hungary. These challenges include language difficulties, financial problems, homesickness, illness, accommodation issues, issues with employment, lack of emotional and social support and finding friends that might affect the health and health-seeking behaviour.

We are interested in hearing about the challenges faced by University of Debrecen students in Hungary so that we can better understand your experiences and improve services that will assist students in improving their health and well-being while studying in Hungary.

To collect information about what would make a difference to your studies and quality of life, researchers from the University of Debrecen will hold a series of discussion groups with international students from late July to mid-August. The groups will include 5-6 International students and a facilitator from the University of Debrecen who will direct the student discussion. The group discussions will be audio-recorded and transcribed so that we can accurately report on the views expressed by students. The transcription will be conducted by a professional transcriber who will treat the information in the strictest confidence. Please be reassured that your views will be treated as STRICTLY CONFIDENTIAL, and names will identify no students. That is, all participants in the research will remain ANONYMOUS.

The research has received ETHICS APPROVAL from the University of Debrecen, which means that involvement in this research is entirely voluntary. It will be conducted in a safe and supportive environment, and the information collected will be used for research purposes only. Participation or non-participation will not affect your studies or access to services.

Be assured that even if you agree to participate in the discussion groups, you can change your mind and leave at any time.
For more information about this research, you may contact Dr Kolozsvári László Róbert at the University of Debrecen through email: kolozsvari.laszlo@med.unideb.hu.

Many thanks for your consideration.

Dr. Kolozsvári László Róbert,

Appendix 2. Consent Form

I now consent to participate in the research project entitled "Assessment of International Student's Perceived Service Quality of Primary Care." I have read and understood the Information Sheet on the above project.

I have been given an adequate opportunity to consider my involvement in this project and consult with others about it. I understand that I may not benefit directly from this research. I understand that while information gained in the study may be published, I will not be identified, and all individual information will remain confidential.

I understand that the researcher will audiotape and transcribe my participation in this research. While information gained during this study may be included in future research publications, I will not be identified or my personal information divulged.

I understand that I can withdraw from the study at any stage until the end of the data collection. I understand that I will not be paid for taking part in this study.

I should retain a copy of the Information Sheet for future reference. I consent to be involved in this project.

Signature: .....

Date: .....

Appendix 3. Interview Guide for International Students

"An Assessment of International Students' Perceived Quality of University Health Centre Services"

Introduction

Thank you for your participation in this study. We are interested in finding out what international students at the University of Debrecen feel and think about their health and perception of the service provided by the University Health Center, particularly what problems and difficulties you or other international students may have had with healthcare services. This interview will last for about 45 – 60 minutes. Do you have any questions before we proceed?

Health and wellbeing and health-seeking behaviour

Leading Questions	Probing Questions
Can you tell us what is thought about health and well-being as international students?	Probe: 1. What kinds of words, description or feelings come to mind? 2. What kinds of feeling are associated with health and wellbeing? 3. What things become difficult when your health and wellbeing are low/compromised?
Have you ever experiencing health related problems during your stay and studying in Debrecen?	Probe : 1. What kind of problem? 2. How you manage it? 3. Is it manageable? 4. Who do you normally see if you have health related problem?

Student experience on visiting or being treated at the University Health Center

Leading Questions	Probing Questions
Can you please what is your experience when visiting or being treated at the university health center?	Probe: 1. What happened? 2. Was it for acute or ongoing health issues?
In general, how would you describe your experience in accessing the university health center?	Probe : Overall satisfaction? if not happy, explore in depth what is the reason
What is your thought about being treated by the UHC staff?	Probe : 1. Do you feel safe and trust the health workers? 2. Do the health care workers show their empathy and treat patients fairly? 3. Do you have enough time to consult about your condition with health care workers in the centre? 4. How about waiting time to get care? Is it on time?

Would you share with me, what is the difference of health care system here and in your country	Probe: 1. Is there any specific differences? 2. What about your health insurance? Is this enough to cover the financial costs of seeking medical services in Debrecen? Do you know what is covered and not covered by health insurance?

Student perspective on healthcare service quality

Leading Question	Probing Questions
In your opinion, how would you describe about healthcare service quality	Probe : 1. What are the best words to describe good services? 2. Why is it important in good services? Note : keep focusing to explore any option made by students about healthcare quality of services
What is your opinion about the quality of care provided to you in the UHC?	Probe 1. Were there any concerns, challenges, or potential conflicts for you with the service delivery? 2. Would you prefer to be treated elsewhere? Note : explore the reason for any option made by the students!
Based on your personal experiences, how can the UHC improve the quality of services for international students?	Probe: 1. Improving service delivery model and management plan? 2. Do you mind sharing some positive or negative of being treated by the healthcare worker in the UHC? 3. What would you like to see changed or improved regarding medical services to international students? What services or organisations have you sought help from?

Closing

Thank you very much for your time and your participation in this study. Before I end the interview, is there any question you would like to ask?

Appendix 4. Questionnaire

A. Demographic Data

1.Gender (please tick one)
- ☐ Female
- ☐ Male
- ☐ Others: ……

2. Age: ……

3. Nationality: …….
4. Marital Status (please tick one)
- ☐ Single
- ☐ In a relationship
- ☐ Married
- ☐ Divorced
- ☐ Others

5. Level of study: (please tick one)
- ☐ Bachelor
- ☐ Master
- ☐ PhD
- ☐ 1 Tier Degree (Medical and Dentistry)
- ☐ Others: ……..

6. Faculty :
- ☐ Healthcare-related (please specify:……..)
- ☐ Non-Health care related (please specify:……..)

7. Student's Status: (please tick one)
- ☐ First Year
- ☐ Second Year
- ☐ Third Year
- ☐ Fourth Year
- ☐ Others

8. Sponsorship :
- ☐ Scholarship (please specify: …….)
- ☐ Self sponsor

9. Which, if any, of the following best describes your religion
- ☐ Christian
- ☐ Muslim
- ☐ Jewish
- ☐ Buddhist
- ☐ Hindu
- ☐ Sikh
- ☐ No Religion
- ☐ Others:……..

10. Last visit time to University GP's service : (please tick one)
- ☐ Less than 1 month
- ☐ Between1-2 months,
- ☐ More than 3 months

11. How frequently are you visit University GP's service? (please tick one)
- ☐ 1 time per month
- ☐ 2-3 times per month
- ☐ Others : ……..

Please tick (√) to the statement very important, important, moderately important, slightly important, or unimportant.

B. Importance of Service Quality of University Health Care [This part is to describe your expectation of the quality of services provided by the University Health Center (GP Office) in the University of Debrecen]

No	Statement	What do you feel?				
		Very Important	Important	Moderately important	Slightly important	Unimportant
S1	**Empathy**					
S11	Health workers listening to you					
S12	Health workers help you to feel well so that you can perform your normal daily activities					
S13	Health care workers tell you what you want to know about your symptoms and illness					
S14	Health care workers make you feel comfortable during consultation					
S15	Health care workers involving you in decisions about your medical care					
S2	**Equity**					
S21	Health workers treating every patient exactly the same					
S22	Health care workers treated with dignity and compassion					
S23	Health care workers are always willing to help					
S24	Health care services are affordable					
S25	Comprehensive service available to all					
S3	**Effectiveness**					
S31	Health workers use effective English in providing care					
S32	Health workers knowing what s/he had done or told you during contacts					
S33	Quick relief of your symptoms after examination					
S34	A visit to the doctor usually results in an improvement in health					
S35	My physical and mental state improved after the visit to the doctor					
S4	**Efficiency**					
S41	Getting an appointment to suit you					
S42	Getting service through digital services					
S43	Waiting time for examination fast					
S44	Health workers provide service competently					
S45	Overall service time in line with expectation					
S5	**Safety**					
S51	Create a safe patient experience					
S52	Explaining the purpose of tests and treatments					
S53	The center insists on error free record					
S54	Medical devices use in the center					
S55	Keeping your records and data confidential					

Please tick (√) to the statement strongly agree, agree, undecided, disagree, or strongly disagree.

C. Performance of University Health Care [This part is to describe your experience while using the service provided by the University Health Center (GP office) in the University of Debrecen]

	Statement	What do you feel?				
		Strongly Agree	**Agree**	**Undecided**	**Disagree**	**Strongly Disagree**
S1	**Empathy**					
S11	Health workers listening to you					
S12	Health workers help you to feel well so that you can perform your normal daily activities					
S13	Health care workers tell you what you want to know about your symptoms and illness					
S14	Health care workers make you feel comfortable during consultation					
S15	Health care workers involving you in decisions about your medical care					
S2	**Equity**					
S21	Health workers treating every patient exactly the same					
S22	Health care workers treated with dignity and compassion					
S23	Health care workers are always willing to help					
S24	Health care services are affordable					
S25	Comprehensive service available to all					
S3	**Effectiveness**					
S31	Health workers use effective English in providing care					
S32	Health workers knowing what s/he had done or told you during contacts					
S33	Quick relief of your symptoms after examination					
S34	A visit to the doctor usually results in an improvement in health					
S35	My physical and mental state improved after the visit to the doctor					
S4	**Efficiency**					
S41	Getting an appointment to suit you					
S42	Getting service through digital services					
S43	Waiting time for examination fast					
S44	Health workers provide service competently					
S45	Overall service time in line with expectation					
S5	**Safety**					
S51	Create a safe patient experience					
S52	Explaining the purpose of tests and treatments					
S53	The center insists on error free record					
S54	Medical devices use in the center					
S55	Keeping your records and data confidential					

Please tick (√) to the statement strongly agree, agree, undecided, disagree, or strongly disagree.

D. Well-being *Care [This part is to describe your experience while studying and living in Debrecen]*

No	Statement	What do you feel?				
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
A	**Academic Life**					
A1	The quality of support from the university is good					
A2	Communication with students at all levels is good					
A3	Availability of staff sufficient for international student					
A4	Teaching and assessments methods are good					
A5	The effectiveness of teaching is good					
A6	The curriculum is well developed					
H	**Health**					
H1	I am satisfied with your health					
H2	I enjoy my life in Debrecen					
H3	Access to health care services is good					
H4	Health insurance is good					
H5	I am satisfied with my ability to perform my daily living activities					
H6	I have been feeling good about myself					
H7	I can manage my diet					
H8	I have been feeling confident					
S	**Social Life**					
S1	I get support from my international friends					
S2	I get support from local (Hungarian) friends					
S3	I get support from my family					
S4	I fell supported in my workplace					
S5	I can engage in social, cultural, and sports activities					
E	**Environmental**					
E1	My physical environment is healthy					
E2	It is easy to access to public transport					
E3	It is easy to find accommodation					
E4	It is easy to find a job					
E5	It is easy to find groceries					
E6	It is easy to find school for my children					

Do you have any other comments about the quality of care the University Health Center provides?

……
……
……
……
……
……

What other kinds of services do university should provide for international students?

……
……
……
……
……
……

------- Thank you for your participation -------

Appendix 5. Study Poster

Appendix 6. Ethical Clearance

KLINIKAI KÖZPONT
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H-4032 Debrecen, Nagyerdei krt. 98.
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DEBRECENI EGYETEM

Regionális kutatásetikai bizottsági vélemény

A Debreceni Egyetem Klinikai Központ Regionális és Intézményi Kutatásetikai Bizottsága a 2022 április 20-i online ülésén áttekintette az alábbi beadványt:

A téma címe: **Az alapellátási szolgáltatók által végzett munka minőségének vizsgálata**

A protokoll azonositója: **(DE RKEB/IKEB-nél): 6047-2022**

A témavezető neve: **Dr. Kolozsvári László Róbert**

Beosztása**: tanszékvezető egyetemi docens, DE ÁOK családorvosi és Foglalkozás-egészségügyi Tanszék, Debrecen**

Kutatásban résztvevő hallgatók: Putu Ayu Indrayathi, Simon Ildikó, Rekenyi Vikotor PhD hallgatók

A megvizsgált dokumentumok felsorolása:

☐X A vizsgálat protokollja

☐X A témavezető és a résztvevő kutatók tudományos életrajza

☐ A betegek/önkéntesek toborzásához használt anyagok, hirdetések

☐X Magyar nyelvű betegtájékoztató

☐X Önkéntességi ill. a betegnek a vizsgálatba való beleegyezését tartalmazó nyilatkozat űrlapja

☐X Kártalanitási megállapodások

A Kutatásetikai Bizottság megjegyzése a protokoll és a csatolt dokumentumok felülvizsgálata alapján:

☐X Kedvező

☐ Kedvező (ajánlásokkal)

☐ Kedvezőtlen (érvekkel)

Vélemény: **A DE RKEB/IKEB a tanulmány megkezdését tudomásul vette, annak kutatásetikai akadályát nem látja az adatvédelmi törvények maximális betartása mellett. A tanulmány befejezését követően 15 napon belül a záró jelentést a DE Regionális Kutatásetikai Bizottságának sziveskedjék megküldeni.**

1

KLINIKAI KÖZPONT
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Felhívjuk a Kérelmező figyelmét arra, hogy az engedélyezett tevékenység (kutatás, vizsgálat vagy klinikai vizsgálat) végzése során a GDPR-ben foglaltakat sziveskedjenek figyelembe venni, és annak rendelkezéseit betartani.

Az RKEB/IKEB részéről kijelölt független orvos: Dr. Ladányi Gábor (Kenézy Campus)

A protokoll áttekintésében résztvevő bizottsági tagok:

☐X Dr. Szántó Sándor egyetemi tanár, az RKEB/IKEB elnöke (DE ÁOK Sportorvosi Tanszék)
☐X Dr. Szentmiklósi József egyetemi docens, az RKEB/IKEB titkára (DE ÁOK Farmakológiai és Farmakoterápiai Intézet)
☐X Dr. Káposzta Rita egyetemi docens, az RKEB/IKEB tagja (DE KK Gyermekgyógyászati Intézet)
☐X Dr. Váróczy László egyetemi docens, az RKEB/IKEB tagja (DE KK Belgyógyászati Intézet)
☐X Dr. Domján Andrea egészségügyi szakmenedzser, az RKEB/IKEB tagja (DE KK Belgyógyászati Intézet, Reumatológiai Tanszék)
☐X Dr. Kovács Péter egyetemi tanár, az RKEB/IKEB tagja (DE KK Belgyógyászati Intézet. Klinikai Farmakológiai Részleg)
☐X Dr. Fekete Klára Edit egyetemi adjunktus, az RKEB/IKEB tagja (DE KK Neurológiai Klinika)
☐X Dr. Enyedi Attila egyetemi tanársegéd, az RKEB/IKEB tagja (DE KK Sebészeti Intézet)
☐ Dr. Keserűné Tomor Andrea tanár, az RKEB/IKEB tagja
☐X Dr. Nagy Béla egyetemi docens, az RKEB/IKEB tagja (DE ÁOK Laboratóriumi Medicina Intézet)
☐X Dr. Gönczi Ferenc főorvos, az RKEB/IKEB tagja (DE KK Infektológiai Klinika)
☐X Dr. Ladányi Gábor főgyógyszerész, az RKEB/IKEB tagja (DE KK Kenézy Gyula Campus Gyógyszertár)
☐X Gál Judit kórházi lelkész, az RKEB/IKEB tagja

A Bizottság a hatályos hazai rendeletekben előírtaknak megfelelően működik és működési szabályzata megfelel az ICH-GCP követelményeinek.

Debreceni Egyetem Klinikai Központ Regionális és Intézményi Kutatásetikai Bizottság

Dr. Szántó Sándor
egyetemi tanár
DE RKEB/IKEB Elnöke

Dr. Szentmiklósi József
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DE RKEB/IKEB titkára