

Determination of quality gap for educational services in undergraduate medical education

A cross-sectional study in Saudi Specialized Health Sciences University

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ABSTRACT

الأهداف: تقييم تصور الطلاب وتوقعاتهم حول جودة الخدمات التعليمية وتحديد الفجوة النوعية في الخدمات التعليمية المقدمة لهم.

الطريقة: أجريت هذه الدراسة المقطعية في كليات جامعة الملك سعود بن عبد العزيز للعلوم الصحية في جميع المناطق (الرياض، جدة، الأحساء) خلال عام دراسي واحد (سبتمبر 2017 – أبريل 2018). تم استخدام دراسة مستعرضة ساعدت في تحديد التصورات والتوقعات من الطلاب للبيئة التعليمية التي تقدمها الجامعة بحيث تم احتساب الفرق بين تصورات الطلاب و توقعاتهم لتحديد الفجوة ما بين هذه الآراء وربط البيانات الديموغرافية الأخرى.

النتائج: كان عدد الاستبيانات المنجزة هو 416 (83.2%) من الاستبيانات مع نسبة متساوية تقريباً من الذكور إلى الإناث (51% و 49% على التوالي). كان هناك اختلاف كبير في متوسط الفجوة بين توقعات الطلاب وتصوراتهم عن جودة الخدمة التعليمية المقدمة لهم في جامعة الملك سعود بن عبد العزيز للعلوم الصحية. أظهرت النتائج قيماً سلبية لمعظم العناصر باستثناء بند (24) من نموذج جودة الخدمة. وكشف أن هناك فرق كبير بين الذكور والإناث في الاستجابة، والتعاطف، والملموسية. كما أظهرت النتائج الاختلاف الكبير في آراء الطلاب وذلك حسب اختلاف المناطق.

الخلاصة: أظهرت نتائج هذه الدراسة أن جميع الأبعاد لم تكن على مستوى توقعات الطلاب. ستساعد نتائج هذه الدراسة الإدارة العليا لإعادة تصميم الخطة التعليمية والإستراتيجية للجامعة والتركيز على تحسين جودة الخدمات التعليمية المقدمة للطلاب.

Objectives: To assess the perception and expectation of students about the quality of educational services and identify the gap in educational services.

Methods: This cross-sectional study was conducted at King Saud bin Abdulaziz University for Health Sciences

(KSAU-HS) colleges across all regions (Riyadh, Jeddah, and Al-Ahsa) within one academic year (September 2017- April 2018). The difference between the students' perceptions and expectations was calculated to identify the gap between these 2 opinions.

Results: A total of 416 (83.2%) questionnaires were completed with an almost equal ratio of male to female (51% and 49%). There was a significant difference in mean (gap) between students' expectations and perceptions of educational service quality at KSAU-HS ($p<0.05$). The results showed negative values for most of the items. It revealed that there is a significant difference between male and female in responsiveness, empathy, and tangible.

Conclusion: The findings of this study showed that all the dimensions were not up to the expectations of students. The results will help the higher management to initiate a protocol to address all weaknesses.

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Education plays a crucial role in developing communities and countries. Running educational institutions with continuous monitoring is the key to the success of the educational process. The high demands and growing focus of universities on quality rather than quantity performance tends to adopt a comprehensive system of quality assurance.¹ The quality improvements will be reflected in different aspects including the reputation, national and international recognition, faculty development and retention, quality of graduates and research progress. Furthermore, the development of service quality has become an important issue in the academia literature.² The establishment of proper service quality is also associated with improvement of students' satisfaction, attraction, loyalty and positive word of mouth.³⁻⁵ Several tools and models have been developed to measure the services quality in higher education.^{3,6-9} The measurement of perceptions and expectations of the primary customer was a traditional method established in the early 1980s. The most commonly used and cited model in literature is the SERVQUAL model.¹⁰ It is based on measuring the gap between the perceived and expected quality service provided to the students. It is important and vital for any organization to minimize this gap as much as possible. This model is used to measure 5 dimensions (assurance, responsiveness, reliability, empathy, and tangible) of educational service quality in several contexts. By utilizing this model, different researchers have attempted to measure service quality in several setting areas such as hospitals,¹¹ banking,^{12,13} hospitality,¹⁴ and specialized colleges.¹⁵ The validity and reliability of the SERVQUAL model was documented very well in literature.^{4,6,16-20} In a large study to examine and evaluate 4 services quality models, Brady and Cronin (2001) found that the SERVQUAL model has the ability to be distinct from other models due to using different determinants to measure the services quality.

In the present study, the SERVQUAL model was applied in an academic institute specialized in health science education. King Saud bin Abdulaziz University for Health Science (KSAU-HS) was officially launched in 2005 and has implemented innovation in its curricula by focusing on problem-based learning and

early introduction of clinical sciences. It is one of the most modern universities in the region, specializing in health sciences and targeting the needs of the country and its citizens in the crucial field of health care. As these academic programs have recently implemented, there is an urgency to study the impact of this methodology of learning on the quality of education. This aim of this study was to assess the perception and expectation of students about the quality of educational services at KSAU-HS and to identify the gap of quality in educational services.

Methods. The study was conducted at KSAU-HS colleges across all regions (Riyadh, Jeddah, Al-Ahsa) within one academic year from September 2017 until April 2018. King Saud bin Abdulaziz University for Health Science is a specialized university in health sciences targeting the needs of the country and its citizens in the crucial field of health care. King Saud bin Abdulaziz University for Health Science has 3 campuses in Riyadh, Jeddah, and Al-Ahsa. The colleges are: College of Medicine, College of Dentistry, College of Pharmacy, College of Public Health and Health Informatics, College of Applied Medical Sciences, College of Science and Health Professions and College of Nursing. The study subject's inclusion criteria to be an undergraduate student, both male and female, within the campus of KSAU-HS in all regions. The students of the pre-professional year (first year) were also excluded from the study due to their lack of enough experience of all university curricula.

The study design was a cross-sectional survey. The SERVQUAL survey instrument was distributed to participants in all colleges. It was in the form of a self-administered close-ended questionnaire. This type of design helped in identifying the students' perceptions and expectations of the educational environment at KSAU-HS. The SERVQUAL questionnaire is a generic instrument to measure satisfaction and was originally developed by a group of experts in marketing and service quality.²¹ It has 5 dimensions with 27 items: assurance (5 items), responsiveness (5 items), empathy (6 items), reliability (7 items) and tangible (4 items). Five-point Likert scale was used to measure the perceptions and expectations of perceived quality. Each item of the SERVQUAL was scored from 1-5 on a response scale in which one representing very poor/least important and 5 was representing very good/very important. The demographic data were age, gender, college, region, current year, current GPA (out of 5), high school (%), aptitude test (%) and achievement exam (%).

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The difference between the students' perceptions and expectations in each domain was calculated in order to identify the gap between the 2 responses. The difference between perceptions and expectations represented the gap of service quality according to the following equation: $Q = P - E$, Where Q was the gap in service quality, P was the student perceptions, and E was the student expectations.

The sample size was calculated by applying the following formula to estimate the number of the sample:

$$n = \frac{(P(1-P) \times Z^2) / d^2}{1-\alpha/2}$$

The confidence interval was 95%, margin of error: 5% and population number: 2211. The software (www.roasoft.com) was used to determine the sample size which was 336 students as a minimum. The number of distributed questionnaires was 500. The completed received questionnaires were 416 with a response rate of 83.2%.

The data were analyzed using IBM SPSS 24.0 software (IBM Inc.). Descriptive statistics for demographic data were calculated which include frequencies and percentages. Inferential statistics using the paired t-test to compare the means and ANOVA to compare all groups were used. The difference between the students' perceptions and expectations was calculated to identify the gap between these 2 opinions. The reliability of the perception (27 items) and expectations (27 items) were

determined by using Cronbach's Alpha test (0.898, 0.902) respectively. A significance p-value was <0.05 for all statistical tests.

The study was approved by King Abdullah International Medical Research Center (KAIMRC) with reference number IRBC/579/15. Filling the questionnaire implied the participants' consent to be included in the study. The confidentiality of the students who underwent the study was maintained all throughout the study.

Results. Data were analyzed using descriptive and inferential statistical analysis. The total number of completed questionnaires were 416 (83.2%). The ratio of male to female was 51% is to 49%. The highest returned questionnaires were from 3rd-year students, while the Riyadh campus was the highest in the number of participants (49.8%) followed by Jeddah campus (48.1%) and Al-Ahsa (2.2%). The difference between the perception and expectation for each item was

Table 1 - Distribution of students by gender and campus.

Characteristic	n	(%)
<i>Gender</i>		
Male	212	(51.0)
Female	204	(49.0)
<i>Campus</i>		
Riyadh	207	(49.8)
Jeddah	200	(48.1)
Al Ahsa	9	(2.2)

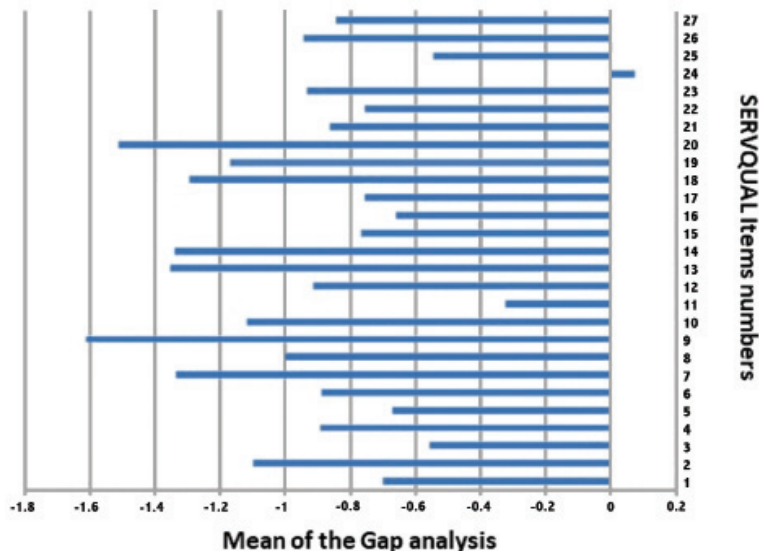


Figure 1 - The mean scores of gap analysis for 27 items of SERVQUAL instrument showed negative values for all items except item 24 ($p < 0.05$).

calculated. In addition, the means for each dimension were also calculated. The results showed negative values for most of the items (except for item 24) as depicted in Figure 1. The highest significant effect was in assurance, responsiveness, empathy, and reliability.

The significant difference between male and female based on SERVQUAL dimensions was tested. It revealed that there is a significant difference in responsiveness, empathy and tangible based on gender ($p \leq 0.05$) as shown in Table 3. Kruskal-Wallis test was used to test if the region has a significant difference with the responses of SERVQUAL dimensions. Table 4 showed the significance differences between the students'

perceptions and expectations were in assurance and responsiveness dimensions ($p < 0.05$). On the other hand, empathy, reliability and tangible have no significant differences ($p > 0.05$). Further analysis to compare the region findings between Riyadh and Jeddah showed that there is a significant difference ($p = 0.039$).

Discussion. The service in health science institutions is defined as a transaction to meet the needs of customers (patients, students, and consumers). In 1983, Lewis and Booms defined the services quality as "a measure of how well the service level delivered matches customer's expectations". In the educational

Table 2 - The significant difference between the perception and expectation for each item for each dimension.

Item	Means Gap	P-value
<i>Assurance</i>		
Facilitating discussion and interaction about lessons in class	-0.070	0.001
Qualifying students for future job	-1.098	0.001
Accessibility of faculty members to Answer students' questions outside the class	-0.557	0.001
Accessibility of adequate references to increase students' professional	-0.894	0.001
Knowledge of the faculty members and its adequacy	-0.671	0.001
Overall means gap	-0.658	
<i>Responsiveness</i>		
Supervisors accessibility when needed	-0.889	0.001
Easy accessibility of administrators to express views about the curriculum	-1.334	0.001
Introducing suitable references to students to read	-1.000	0.001
Making an allowance for students' views and suggestions in curriculum	-1.611	0.001
Declaring the hours that students can refer to faculties to talk about their educational problems	-1.117	0.001
Overall means gap	-1.190	
<i>Empathy</i>		
Assigning suitable and relevant homework	-0.324	0.001
Faculty members flexibility when exposing to specific conditions of each student	-0.915	0.001
Convenience of class hours	-1.353	0.001
Silent and convenient places in school for reading	-1.338	0.001
Respectful behavior of school staff with students	-0.769	0.001
Respectful behavior of faculty members with students	-0.658	0.001
Overall means gap	-0.892	
<i>Reliability</i>		
Presenting educational content regularly and relevantly	-0.757	0.001
Informing students about the result of the examinations	-1.295	0.001
Presenting materials and content understandably	-1.170	0.001
Give higher scores if students attempt more	-1.512	0.001
Recording students' educational documents without mistake	-0.863	0.001
Easy accessibility of available references at the university	-0.757	0.001
Fulfilling responsibilities by faculty members and staff in the promised time	-0.932	0.001
Overall means gap	-1.041	
<i>Tangible</i>		
Professional appearance of faculty members and staff	0.074	0.332
Visual appealing and comfort of physical facilities	-0.545	0.001
Up to date material and educational equipment	-0.944	0.001
Visual appealing of teaching tools	-0.846	0.001
Overall means gap	-0.565	

Gap refers to the differences between the perception and expectation

setting, the service quality is defined as the capability of an institution to achieve the expectations of students.²² The quality of health systems is directly dependent on the quality of health science education.²³ Nadiri et al²⁴ stated that it is essential for any educational institute to recognize and evaluate the students' perceptions and expectations of educational service quality.

This study aimed to evaluate the students' opinion about the educational services quality by a using SERVQUAL model at KSAU-HS. The findings revealed a negative gap in all of the 5 SERVQUAL dimensions. The present results were in line with the other previous studies published in the literature.²³⁻²⁶ The highest gap was found in the responsiveness dimension followed by reliability, assurance, empathy and finally intangible dimensions. Similarly, a study conducted by Legčević²⁷ showed negative gaps in educational services in all SERVQUAL dimensions except the tangible dimension, which show a positive gap. Different results in several studies showed that students have different understandings about educational quality and its dimensions. This implies that most universities need to improve educational plans that should be based on students' point of view. Negative quality gap results reflect that the expectations of the students have not been met and their experience indicates dissatisfaction. Therefore, an action plan for improvements is required with consideration of all 5 SERVQUAL dimensions.

Our findings also revealed a difference between male and female opinions in 3 dimensions; responsiveness, empathy, and tangible. Female students have their greatest gap in responsiveness while male students have the most dissatisfaction in empathy and tangible. A study conducted at Ryerson University,²⁶ found that assurance and empathy dimension was found to be the highest gap followed by responsiveness dimension. On the other hand, a study from Western Washington University in the United States also showed a negative gap but with no statistical difference in all dimensions. Empathy dimension disclosed that the university prompt response to the students' requests, sensitivity, and complain were still under their expectations. Extra time for students to discuss their concerns and suggestions should be allocated during the classes and after. Faculties and administrative staffs might need additional training to meet the students' expectations.

The current findings of a great negative quality gap in the responsiveness dimension indicate that the university's willingness to help students and provide prompt services need to be revised. It is suggested that

the students might not have an easy process to express their concerns and suggestions. Faculties also are not accessible easily when students need them. For the purpose of eliminating or reducing the gaps value, the SERVQUAL dimensions should be prioritized and considered. Improvement of educational quality in one dimension would affect positively the quality gaps in other dimensions.²⁸ Our findings allow the management of the university to focus on understanding how their students perceive the services provided and might help for a positive impact on students' perceived service quality. The educational service quality with a negative gap can be utilized as a guideline for the planning of improvements accordingly.²⁹

The present analysis showed also that the students' expectations based on the campus were significant for assurance and responsiveness. Responsiveness was found to have the highest negative mean gap in all campuses. Al Ahsa campus had the lowest mean gap in responsiveness and assurance compared to Riyadh and Jeddah campuses.

The study was conducted in a single institute for the health science students. This limitation of the study would not be allow the results to be generalized to other type of students or universities. In addition, using a single instrument such as the SERVQUAL, despite the wide usage of this tool, still required additional instrument to have an extensive view of all aspects for educational quality improvement. It is strongly recommended to conduct a similar study in a large university. Implementing such an instrument in other universities will result in improving the educational system in Saudi Arabia.

In conclusion, this is the first study investigating students' perceptions and expectations of educational service quality conducted in Saudi Arabia by using SERVQUAL model. The findings of this study showed that all the dimensions were not up to the expectations of students. The results will help the higher management to initiate a protocol to address all weaknesses. Improvements are needed across all 5 SERVQUAL dimensions. Engaging students when developing a strategic plan and curriculum construction is of paramount importance. Clear directions and priorities during the improvement processes of SERVQUAL dimensions are required. Implementing such an instrument in other universities will result in improving the educational system in Saudi Arabia.

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