

RESEARCH ARTICLE

Implementation of Importance-Performance Analysis (IPA) for Improving Medical Students' Quality of Service in Teaching Hospital

Siska Nia Irasanti,¹ Ieva Baniasih Akbar,² Yani Dewi Suryani³

¹Department of Public Health, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia,

²Department of Physiology, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia,

³Department of Pediatric, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia

Abstract

One of the most relevant elements for improving the quality of an organization is the recognition of customer satisfaction and perceived quality of services. During their clerkship, medical students are required to work with different medical specializations in rotation and treat patients under the supervision of the attending physicians. The purpose of the study is to explore the medical students' quality of service using the importance-performance analysis (IPA) diagram that focused on the conformance level (CLi) between the actual service performance score and patient expectation score. This was a cross-sectional study involving 160 patients and patient caregivers at the Department of Pediatric of West Java Provincial Al-Ihsan Regional General Hospital Bandung, who was a purposive sampling method to participate in the study during January 2018. Results showed that the total CLi was less than 100%. The CLi scores for responsiveness, empathy, assurance, and reliability components were 84.57%, 84%, 83.56%, and 83.45%, respectively. It can be concluded that the services provided were good, but have not yet been able to meet the expectation of the patients. Overall, the IPA is useful to identify areas for strategic focus in improving the quality of services provided by medical students to help the hospital managers and faculty of medicine develop education management strategies.

Key words: Clerkship, IPA, service quality

Penerapan *Importance-Performance Analysis* (IPA) untuk Meningkatkan Kualitas Pelayanan Mahasiswa Selama Kepaniteraan di Rumah Sakit Pendidikan

Abstrak

Salah satu elemen yang paling relevan untuk meningkatkan kualitas organisasi adalah mengetahui kepuasan dan kualitas layanan yang dirasakan oleh konsumen. Selama kepaniteraan, mahasiswa kedokteran diwajibkan untuk berotasi melalui berbagai spesialisasi medis dan merawat pasien di bawah pengawasan dokter. Tujuan penelitian ini mengetahui kualitas pelayanan mahasiswa kedokteran dengan menggunakan diagram *importance-performance analysis* (IPA) yang berfokus pada tingkat kesesuaian (Tki) antara skor kinerja layanan aktual dan skor harapan pasien. Penelitian ini merupakan penelitian *cross-sectional* yang melibatkan 160 pasien dan penunggu pasien di Departemen Ilmu Kesehatan Anak di RSUD Al-Ihsan Provinsi Jawa Barat Bandung dengan metode *purposive sampling* selama bulan Januari 2018. Hasil penelitian menunjukkan bahwa total Tki kurang dari 100%. Skor Tki untuk komponen respons, empati, *assurance*, dan reliabilitas masing-masing adalah 84,57%, 84%, 83,56%, dan 83,45%. Dapat disimpulkan bahwa faktor layanan yang diberikan baik, tetapi belum memenuhi harapan pasien. Meskipun demikian, IPA berguna untuk mengidentifikasi area untuk fokus strategis dalam meningkatkan kualitas layanan yang diberikan mahasiswa kedokteran untuk membantu manajer rumah sakit dan fakultas kedokteran mengembangkan strategi manajemen pendidikan.

Kata kunci: IPA, kepaniteraan, kualitas pelayanan

Received: 7 April 2020; Revised: 15 April 2020; Accepted: 24 April 2020; Published: 30 April 2020

Correspondence: Siska Nia Irasanti, drg., M.M. Department of Public Health, Faculty of Medicine, Universitas Islam Bandung. Jln. Tamansari No. 22, Bandung 40116, West Java, Indonesia. E-mail: siska_drg@rocketmail.com

Introduction

Consumer satisfaction in health care services is particularly important to create greater involvement of the clients during health care processes and also to achieve higher patient compliance and avoid dissatisfaction that may trigger them to seek treatment elsewhere.¹ One of the most relevant elements for improving the quality of an organization is the understanding of customer satisfaction and customer's perceived quality of services.² Zulkarnain et al.³ suggested that patients with a lower educational background are generally more satisfied than those with higher education. Gaps are often observed between the expectation categories and overall perception of quality.

Service quality can be measured from the perspectives of patient perception, patient expectation, patient satisfaction, and patient attitude. Due to the intangibility, inseparability, heterogeneity, and perishability characteristics of services, it is very difficult to define service quality. In the context of increasing access to information, along with tougher competition, patients become more demanding than ever. The advances in technology also enable patients to make comparisons quickly and accurately between available services.⁴ SERVQUAL is an instrument that is useful to measure the functional quality of the organization, which is defined as the manner in which the health care service is delivered to the patients. The functional quality cannot be sustained in a health care setting without accurate diagnoses and procedures.⁵

During the clerkship, medical students are required to work with different medical specializations in rotation and treat patients under the supervision of the attending physicians. The importance-performance analysis (IPA) enables the hospital management to evaluate and identify the major strengths and weaknesses in the performance that become the key success factors of the hospital and the importance of the quality of services provided by medical students. The importance-performance analysis is a useful tool for directing continuous quality improvement towards higher education.⁶

This study aimed to assess the performance and the importance of the quality of services provided by medical students, as well as to determine the quality of services provided by medical students based on the performance and importance through the use of the cartesian

diagram which reflects patients and patient caregivers satisfaction with the services provided by medical students during the clerkship period.

Methods

This study was a cross-sectional method, and the analysis tool used in this study was the IPA diagram with the conformance level to compare the actual service performance score to the patient expectations score for services provided by medical students.⁶ Responses obtained from 160 patients and caregivers purposively sampling at the Department of Pediatric of the West Java Provincial Al-Ihsan Regional General Hospital, which is the main teaching hospital of the Faculty of Medicine, Universitas Islam Bandung period January 2018.

A modified SERVQUAL instrument had developed with 13 matched pair items for expectation and perception, which represented four attributes that considered to have a high and significant correlation with patient satisfaction in the health care setting. The four attributes included in this instrument were responsiveness, assurance, empathy, and reliability dimension. Five-point Likert response format (ranging from strongly agree=5 to strongly disagree=1) was used instead of the seven-point scale format based on the results of discussion with experts and the hospital management (Table 1).^{5,7,8}

The dimensions included in the questionnaire listed in Table 2.

This study was with a tentative population size. The sample size calculated using the Lemeshow formula as follows.⁹

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

Description: n=the required minimum sample size; Z=confidence level with the z score at 95%=1.96; P=estimates of the population proportion with the maximum estimated=0.5; d= alpha (0.10) or sampling error=10%

The calculation of the sample size gave a minimum sample size of 96 participants. The researchers then decided to use a sample size of 160 participants.

The IPA was performed by calculating scores of importance and performance of system attributes resulted from users' perceptions and depicted on a two-dimensional grid.¹⁰⁻¹⁴

The conformance level of the respondents was performed by comparing the service performance

assessment score to the actual score of the patient expectations by using the following formula.¹⁵

$$CLi = \frac{Xi}{Yi} \times 100\%$$

Description: CLi=conformance level of respondent;
Xi=actual service performance assessment score;
Yi=patient expectation score

Through the calculation of the conformance level, the quality of services provided by medical students in the teaching hospital can be assessed to understand whether the services provided were satisfactory or not.

To understand the meaning of the conformance level score of each service factor, a cartesian diagram was used. The horizontal axis (X) represented the actual service performance score while the vertical axis (Y) represented the patient expectation score. To make it simple, each service factor that influence patient satisfaction was determined using the formula below.¹⁵

$$X = \frac{\sum Xi}{n} \quad Y = \frac{\sum Yi}{n}$$

The cartesian diagram was used to determine the service factors with high-performance according to the patients and the service factors that were expected to have the best performance by the patients. The formula used was as follow.¹⁵

$$X = \frac{\sum_{i=1}^n Xi}{K} \quad Y = \frac{\sum_{i=1}^n Yi}{K}$$

Where K represented the number of service dimensions that could affect patient satisfaction. The cartesian diagram used to map service quality is shown in Figure 1.

The study protocol had approved by the

Health Research Ethics Committee of the Faculty of Medicine, Universitas Islam Bandung.

Results

The results showed the total CLi was <100%, where the CLi for the responsiveness, empathy, assurance, and reliability dimension was 84.57%, 84%, 83.56%, and 83.45%, respectively (Table 3).

Figure 2 described the IPA of the quality of services provided by medical students. Quadrant A of the diagram indicated a high patient expectation towards the service factors, but the actual performance of the service was poor (Figure 1). Hence, factors in this quadrant should become the top priority for correction and improvement. There were 3 (three) factors in this quadrant, namely responsiveness 4 (services provided quickly and responsively to patients), assurance 3 (serving patients promptly), and empathy 1 (spend adequate time to serve patients).

Quadrant B indicated a high patient expectation towards the service factor and high actual performance of the factors. Thus, these need to be maintained. achievement of these services factors must be maintained. This quadrant consisted of 5 (five) service factors, i.e. reliability 2 (asking for information to patients in a good and clear manner), empathy 2 (pay serious attention to patients), responsiveness 1 (willing to respond to patients' complaints) and 2 (receive and serve patients well).

Quadrant C indicated that patient expectation was low for the service factors and the actual performance of the service factors was also low. Thus, even though they were not really a priority, the performance of these factors was needed. There were 5 (five) the service factors in this quadrant, namely reliability 1 (say greetings "assalamualaikum wr. wb." before asking for information to patients), reliability

Table 1 Scale Used in Questionnaire

Five-Points Likert Scale Responses				
1) Actual service performance variable (X)				
1	2	3	4	5
Disappointing	Poor	Good	Satisfactory	Highly satisfactory
2) Patient expectation variable (Y)				
1	2	3	4	5
Highly unimportant	Unimportant	Quite important	Important	Very important

Table 2 Questionnaire Dimensions

Reliability

- 1 Say greetings “*assalamualaikum wr. wb.*” before asking for information to patients.
- 2 Asking for information to patients in a good and clear manner.
- 3 Describe actions that will be performed to patients (anamnesis).
- 4 Say “*alhamdulillahirabbilalamin*” after finishing the session with patients.

Responsiveness

- 1 Willing to respond to patients’ complaints.
- 2 Receive and serve patients well.
- 3 Provide fair and non-discriminatory services to patients.
- 4 Services provided quickly and responsively to patients.

Assurance

- 1 Convincing attitude and ability to make patients feel safe.
- 2 Polite and friendly when serving patients.
- 3 Serving patients promptly.

Empathy

- 1 Spend adequate time to serve patients.
- 2 Pay serious attention to patients.

3 (describe actions that will be performed to patients (anamnesis)), reliability 4 (say “*alhamdulillahirabbilalamin*” after finishing the session with patients), responsiveness 3 (provide fair and non-discriminatory services to patients) and assurance 1 (convincing attitude and ability to make patients feel safe).

Quadrant D presented service factors with low patient expectation but the high actual performance of service that the performance of the service indicators here was excessive and no

further attention for improvement was needed. No service factor was assigned in this quadrant.

The service performance assigned to the right side of the average performance line or in quadrant B could be categorized as service factors with good performance based on the average performance value of 5 out of 13 service factors, or 38.5%. Since almost half of the service factor performance was in this category, it can be stated that the performance of services by the medical students during clerkship in the teaching hospital was generally good.

The cartesian diagram also enables us to understand the level of patient expectation towards high-quality service performance for each service factor. The upper the position of a factor on the cartesian diagram, which is parallel to the Y-axis, indicates that the service factor has received attention from the service provider because it is considered important. Therefore, service factors located in this area are considered to be satisfactory. Service factors above the

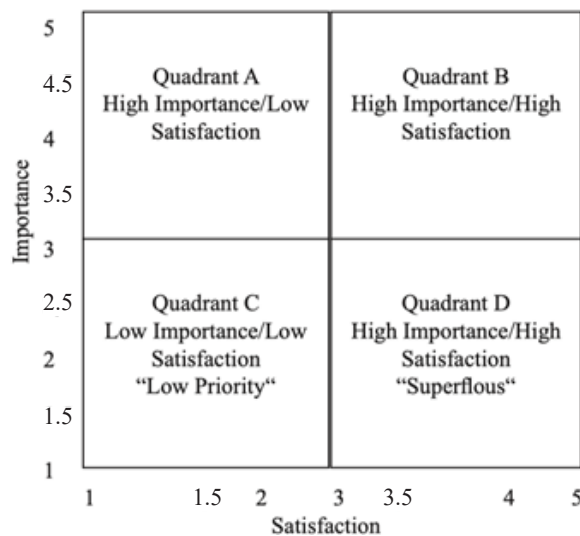


Figure 1 Cartesian Diagram⁷

Table 3 Conformance Level (Cli)

Dimension	CLi (%)
Responsiveness	84.57
Empathy	84
Assurance	83.56
Reliability	83.45

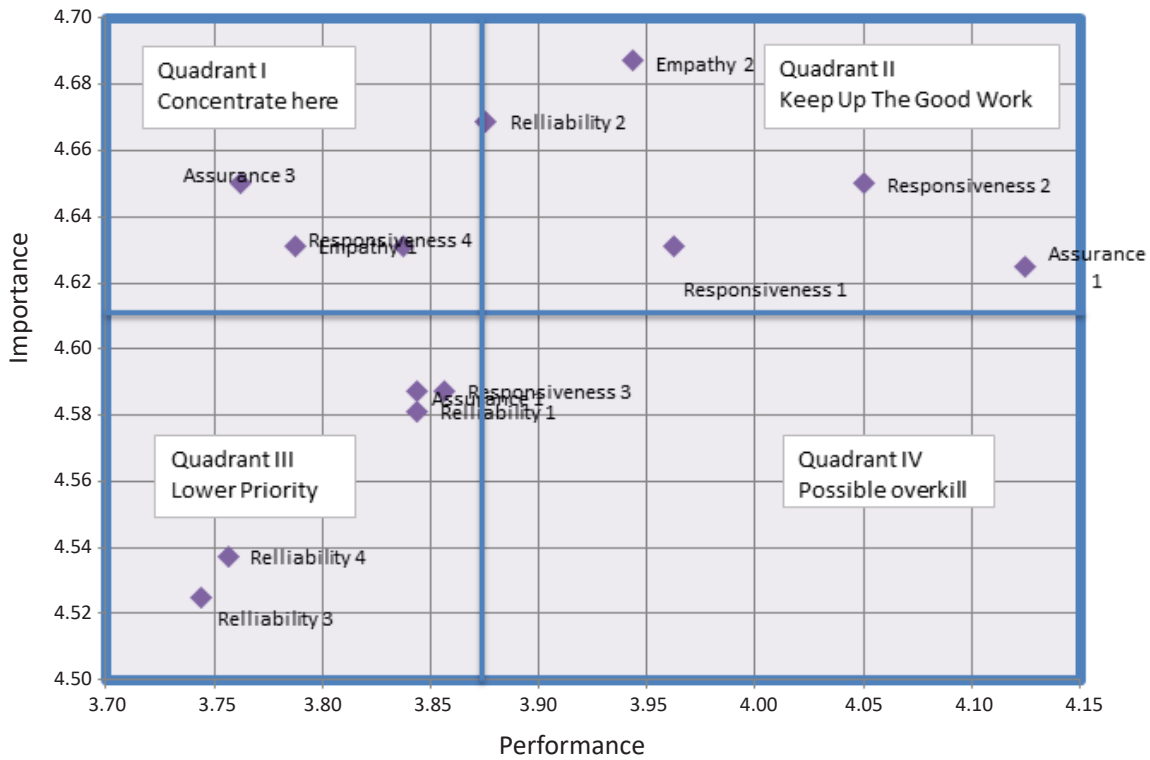


Figure 2 Importance-Performance Analysis (IPA) of the Quality of Services Provided by Medical Students During Clerkship in Teaching Hospital

average expectation line, or in quadrant A and B, are the focus of services performance development because they have exceeded the average expectations.

In terms of patient ratings, the best service performance dimension for services provided by medical students in Al-Ihsan Teaching Hospital at the time of the study was the responsiveness

Table 4 Average Score of Service Performance and Patients Expectation per Dimension

Instrument Number	Dimension	Number of per Dimensional Instrument	Performance		Expectation	
			Score	Average	Score	Average
1	Reliability	4	3.84	3.8	4.58	4.58
2			3.88		4.67	
3			3.74		4.53	
4			3.76		4.54	
5	Responsiveness	4	3.96	3.93	4.63	4.63
6			4.05		4.65	
7			3.86		4.59	
8	Assurance	3	3.84	3.91	4.63	4.62
9			3.84		4.59	
10			4.13		4.63	
11			3.76		4.65	
12			3.79		4.63	
13	Empathy	2	3.94	3.87	4.69	4.66

dimension a score of 3.93, which was the highest among all dimensions as depicted in Table 4. In contrast, the reliability dimension was considered as the poorest dimension, especially regarding describing actions that will be performed on the patients (anamnesis). The average score of service performance and patients expectation per dimension is shown in Table 4.

When patient expectation scores were ranked by dimension, the order of the scores was, from the highest to the lowest: empathy, responsiveness, assurance, and reliability. The sequence describes the level of patient expectation on service factors in each dimension. The higher the expectation score is, the more patients expect satisfactory service performance. In this study, patients expected the best service in the empathy dimension that comprised of adequate time to serve patients and pay serious attention to patients. However, the results as shown in Table 4 presented that the score for the service performance in the empathy dimension was still less than the scores in the assurance and responsiveness dimensions. This will lead to a reduced level of patient satisfaction despite the overall high service performance level achieved by the medical students.

Discussion

The service performances were good in general but still unable to meet the expectation of the patients. Medical students were seen to be willing to respond to patient complaints; receive and serve the patients well; ask for information to the patients in a good and clear manner; had a convincing attitude and make patients feel safe and pay serious attention to patients. This shows that the basic service elements were successfully implemented and should be maintained as very important and very satisfactory service elements.

On the other hand, there were also service factors that received high expectations from the patients but the actual performance was poor. These included the elements of services provided quickly and responsively to patients; serving patients promptly; and spend adequate time to serve patients. These service factors should be a top priority for correction and improvement.

Several factors underlie this poor performance including limited consultation time, too many patients visiting the pediatrics department, and the lack of privacy during medical student and patient interactions due to limited space.

Other factors were considered as less

important by the patients and the implementation by the hospital was mediocre. These factors should become lower priorities for improvement because they were less important, even though they were less satisfactory. The factors considered in this group were greetings and salam in Islam. This is different with the study of Rafik and Priyono,¹⁶ who is finding that the presence of good environment and Islamic value embodiment supporting learning programs on campus is the most significant trigger for the knowledge development.

This result is different from the findings of Zulkarnain et al.³ where the responsiveness domain demonstrates the largest unfavorable gaps between performance and expectation, and the direction of the gaps indicates a higher perceived quality than expected. Campos et al.¹⁷ also revealed different aspects of the attributes considered to be the most important, namely explanation and level of knowledge as well as attention dispensed by health professionals, which were included in the reliability dimension.

The biggest gap in the service performance from the perspective of patient expectation towards services provided by medical students is identified in the empathy dimension. In addition, there are gaps in the assurance and responsiveness dimensions, although not as big as in the empathy dimension. From the perspective of service performance, the responsive dimension is considered the best and the reliability dimension is considered the poorest.

The service factors that are considered to have met patients' expectation are the willingness to respond to patient complaints, ability to receive and serve patients well, ability to ask for information from patients in a good and clear manner, ability to show convincing attitude and make patients feel safe, and also ability to pay attention seriously to the patients. These factors need to be maintained.

In contrast, factors that are considered not satisfactory by patients due to the gap between patient expectation and actual performance of service are quick and responsive to patient, serve patients promptly, and adequate time for serving patients. These service factors should become the top priority for correction and improvement. Other factors also need to be improved, albeit in lower priority.

Once the patients' requirements have been clearly identified and understood, a manager will likely be in a better position to anticipate

and cater to their desires and needs rather than merely react to their dissatisfaction.¹⁸ The role of the management here mainly includes training students in physical examination skills, patient expectation assessment, and relational and humanistic aspects of communication to show respect to individual patients.^{19–21}

Evaluating a health care center's performance from the patient's point of view will improve the manager's understanding of customer satisfaction. Patients who are satisfied with their health care services are more likely to spread favorable word-of-mouth publicity.²²

The IPA of the quality of services provided by the medical students during clerkship is useful for identifying areas that should become the strategic focus of the hospital managers and the faculty of medicine in developing education management strategies. Further studies are needed to determine the effectiveness of IPA of the quality of services provided by medical students during clerkship in a larger group. In addition, it is also necessary to study the effectiveness of this simulation model to improve a service quality in other teaching hospital departments in the future.

Conclusion

The service performances were good in general but still unable to meet the expectation of the patients. The biggest gap in the service performance from the perspective of patient is in the empathy dimension. The service factors that considered to meet patients' expectation is the willingness to respond to patient complaints, ability to receive and serve patients well, ability to ask for information from patients in a good and clear manner, ability to show convincing attitude and make patients feel safe, and also ability to pay attention seriously to the patients.

Conflict of Interest

All authors declare no conflict of interest.

Acknowledgments

We sincerely thank the Faculty of Medicine, Universitas Islam Bandung, for funding our study.

References

- Coțiu MA. Consumer satisfaction in the healthcare sector. A critical review of some empirical studies. *IJEPT*. 2014;4(2):168.
- Rodrigo-Rincón I, Reyes-Pérez M, Martínez-Lozano ME. Personalizing the reference level: gold standard to evaluate the quality of service perceived. *Rev Esp Med Nucl Imagen Mol*. 2014;33(2):65–71.
- Zulkarnain AK, Kristina SA, Saraswati MS. Perceived service quality and patient satisfaction at pharmacy department in Yogyakarta Indonesia. *Value Health*. 2017;20(9):A157.
- Sachdev SB, Verma HV. Relative importance of service quality dimensions: a multisectoral study. *J Serv Res*, 2004;4(1):94–116.
- Akhade GN, Jaju SB, Lakhe RR. Healthcare service quality dimensions in various countries. *IOSR-JNHS*. 2016;5(3):70–6.
- O'Neill MA, Palmer A. Importance-performance analysis: a useful tool for directing continuous quality improvement in higher education. *Qual Assur Educ*. 2004;12(1):39–52.
- Hindarwati EN, Jayasari A. Analisis kualitas pelayanan PT Jasa Raharja dengan metode SERVQUAL. *BBR*. 2004;5(2):626–37.
- Sarjono H, Natalia. SERVQUAL dalam pelayanan kelas pada laboratorium manajemen. *Binus Business Rev*. 2014;5(1):404–17.
- Lwanga SK, Lemeshow S. Sample size determination in health studies: a practical manual. Geneva: WHO; 1991.
- Martilla JA, James JC. Importance-performance analysis. *J Mark*. 1977;41(1):77–9.
- Ainin S, Hisham NH. Applying importance-performance analysis to information systems: an exploratory case study. *JIITO*. 2008;3:95–103.
- Cohen JF, Coleman E, Kangethe MJ. An importance-performance analysis of hospital information system attributes: a nurses' perspective. *Int J Med Inform*. 2016;86:82–90.
- Sukumaran AKS, Anushan SCS, Alamelu R, Thiyagarajan S. Diagnosing SWOT through importance-performance analysis. *Res J Appl Sci Eng Tech*. 2015;9(9):792–6.
- Aggelidis VP, Chatzoglou PD. Hospital information systems: measuring end user computing satisfaction (EUCS). *J Biomed Inform*. 2012;45(3):566–79.
- Supranto J. Pengukuran tingkat kepuasan

- pelanggan untuk menaikkan pangsa pasar. 4th Printing, Jakarta: Rineka Cipta; 2011.
16. Rafik A, Priyono A. A new insight into alumni satisfaction model for Islamic higher education institutions (IHEI). *Manag Res Rev.* 2018;41(12):1411–37.
 17. Campos DF, Negromonte Filho RB, Castro FN. Service quality in public health clinics: perceptions of users and health professionals. *Int J Health Care Qual Assur.* 2017;30(8):680–92.
 18. Fornell C. A national customer satisfaction barometer: the Swedish experience. *J Mark.* 1992;56(1):6–21.
 19. Wykurz G, Kelly D. Developing the role of patients as teachers: literature review. *BMJ.* 2002;325(7368):818–21.
 20. Hammond M, McLean E. What parents and carers think medical students should be learning about communication with children and families. *Patient Educ Couns.* 2009;76(3):368–75.
 21. Ericson KA. Deliberate practice and the acquisition and maintenance of expert performance in medicine and related domains. *Acad Med.* 2004;79(10 Suppl):S70–81.
 22. Rodrigo-Rincón I, Reyes-Pérez M, Martínez-Lozano ME. Personalizing the reference level: gold standard to evaluate the quality of service perceived. *Rev Esp Med Nucl Imagen Mol.* 2014;33(2):65–71.