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ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

# Patient satisfaction in healthcare services
## A comprehensive analysis of a primary health center in Greece

OBJECTIVE **To determine patients' overall satisfaction with the services which they receive from a primary health center in Greece and the factors that influence their satisfaction.** METHOD **An electronic structured questionnaire was used for data collection for this research paper. The survey was conducted via simple random sampling from February to April 2024. A total of 350 questionnaires were collected.** RESULTS **The results were analyzed using the Multicriteria Satisfaction Analysis (MUSA) model. MUSA is an ordinal regression model based on the principles of multicriteria decision analysis. The research results showed that the average satisfaction index was about 97.92%.** CONCLUSIONS **Given the results, measuring patient satisfaction is a strategic tool for a healthcare organization's long-term sustainability and growth.**

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2026, 43(2):198–204

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Ικανοποίηση ασθενών από τις υπηρεσίες υγείας: Μια ολοκληρωμένη ανάλυση ενός πρωτοβάθμιου κέντρου υγείας στην Ελλάδα

*Περίληψη στο τέλος του άρθρου*

**Key words**

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Primary health care is a core component of any healthcare system and is fundamental to achieving universal health coverage. It focuses on providing comprehensive health services, from promotion and prevention to treatment, rehabilitation, and palliative care, while being people-centred.[1] In Greece, the health care system has faced significant challenges, especially in the years following the economic crisis that began in 2008.[2] Additionally, due to the economic downturn in Greece, the health system remains hospital-centred, and primary health care has yet to develop to the extent that it should.[3]

In 2014, the Greek government with support from the European Union started implementing the "Primary Health Reform Project". This project aimed to build a comprehensive and integrated primary healthcare system by developing a network of local primary healthcare units (known as TOMYs).[4] It demonstrates the government's commitment to improving the quality of primary health services for its citizens.[5–7] Quality in health services encompasses various dimensions and aspects of healthcare delivery, with the ultimate goal of ensuring that patients receive safe, effective, timely, patient-centered, efficient, and equitable care.[8–11] The primary distinction between health services and various other services in terms of quality is that they are focused on patients' requirements rather than consumers' wishes.[12] The concept of patient satisfaction has been presented in the international literature as a reliable index for evaluating health policy results; it is directly linked to sufficient satisfaction with general and particular health needs.[13,14]

However, the quality of services can be more challenging to achieve than that of products.[15] Looking at the international literature on service quality, one will find that this concept appeared in the 80s, during which large companies began to develop service quality measurement programs.[16] Following a different approach, some researchers[17] consider that service quality is the set of characteristics of a service or a product that satisfy expressed or inferred customer needs. Another researcher,[18,19] who delved further

into the issue of service quality, examined service quality in two different dimensions. The first dimension concerned technical or production quality, while the second focused on operational quality. It is also apparent that products and services should not only be suitable for the use for which they are created, but at the same time, they should not only meet customer expectations to the greatest extent possible but also often exceed them.[20–23] The health industry is an important industry in which the provision of quality services is important.

Analyzing the literature on the implementation of qualitative research in the health sector, one can find that the most extensive methods used concern the five dimensions of the SERVQUAL model. Based on the above model, a series of surveys was carried out. It is also noteworthy that many studies followed the philosophy of the SERVQUAL model[18] according to which service quality results from integrating total quality into three dimensions: technical quality, operational quality and corporate image.

In the last decades, customer satisfaction has been the basis for businesses, and their goal is to play a leading role in the modern global economic situation. The purpose of a business is to initially satisfy a customer with its products or services to win them over.[24] Customer satisfaction is vital for the survival of a business, and the goal should always be customer satisfaction.[25] On the other hand, satisfaction measures how well the offered product/service fulfils the customer's expectations.[26] Patient satisfaction is one of the most important factors affecting healthcare services and outcomes. Healthcare organizations need to know how satisfied their patients are so that their needs are translated into parts of their strategy. Patient satisfaction is a subjective evaluation of individuals. It is a cognitive evaluation of patients toward the services that affect them emotionally.[27] Patient satisfaction is a complex and evolving concept essential for assessing healthcare quality. Initially focused on clinical outcomes and pain relief, the emphasis shifted toward understanding patients' subjective experiences, reflecting their perceptions and expectations of care.[28–30] Integrating patient satisfaction into healthcare systems enhances quality and ensures patient-centred care. On the other hand, patient satisfaction has become a critical measure in evaluating healthcare services. Some researchers link satisfaction to healthcare quality through structure, process, and outcomes.[31,32] Structure includes resources and infrastructure, the process relates to interactions during care delivery, and outcomes encompass patient recovery and overall experiences. These dimensions categorize healthcare quality into minimum, average, and ideal levels to achieve patient-centred care.[33,34] Patient satisfaction impacts clinical outcomes, malpractice claims, and patient adherence to treatment, emphasizing its significance in healthcare, communication, timely care, and infrastructure quality.[35–37]

A patient's satisfaction is influenced by the doctor-patient therapeutic relationship, therapeutic efficacy, the patient's health-related quality of life, the doctor's technical skills and the quality of the information provided to the patient, the hospital environment, the quality of infrastructure and support services, the patient's previous experiences and the cost of services, as well as the fulfilment of his needs and desires.[38]

According to the reviewed literature, we aimed at three main objectives regarding the research goals. The first objective was to analyze global satisfaction and locate the most important variables that promote the healthcare unit's competitive advantage. The second objective was to investigate the relation of patients' satisfaction to the sociodemographic variables. The third objective was to investigate how waiting time is related to global satisfaction.

## MATERIAL AND METHOD

### Sample selection and research goals

To explore patients' satisfaction with provided services, this research used a sample from the Local Health Center of Vari, which is situated in the Attica region, Greece. The Greek Local Health Centres (TOMY) are public organizations in central municipalities nationwide. A small multidisciplinary health team staffs them. Their primary mission is to provide quality healthcare services to the population they are responsible for at a local level. Their main objective is to provide health promotion services to the local population, provide comprehensive care to patients, with an emphasis on treating chronic diseases, and provide services related to public health, such as vaccinations, home care, and other medical services.

Because the population variance for our survey variables was unknown, a pilot survey was initially conducted on a sample size of n=50 individuals to calculate the sample size. Using this pilot sample, Eng calculated the ratio (p) for each qualitative research variable.[43] The sample size calculation was then carried out, returning an estimated sample size of 366 cases, which was rounded down to 350. An online electronic questionnaire based on the SERVQUAL model was used for data collection. Patients expressed their satisfaction preferences using a five-point Likert scale (very dissatisfied, dissatisfied, neutral, satisfied, very satisfied). Sample selection was conducted via a simple random method, using the patient's e-mail addresses and randomly selecting 350 cases from February to April 2024. We used the MUSA method through MS Excel and the Statistical Package for Social Sciences (SPSS), version 20.0 for the analysis.

The SERVQUAL Questionnaire and the MUSA method are presented in the following subsections.

### The SERVQUAL quality questionnaire

The SERVQUAL instrument is widely used for measuring service quality in various industries, including healthcare. The SERVQUAL[39] is both a methodology and a tool for analyzing, developing, and measuring service quality on a functional rather than a technical level.[40] The measurements of SERVQUAL model are as follows:[39] "Tangibles: Physical facilities, equipment and personnel appearance. Reliability: The ability to perform the service accurately and dependably. Responsiveness: Willingness to help customers and provide prompt service. Assurance: Employees' knowledge, courtesy and ability to convey trust and confidence. Empathy: Caring and individualized attention provided to customers".

### The MUSA's method

The Multicriteria Satisfaction Analysis (MUSA) method is a structured mathematical approach to evaluate patient satisfaction by integrating multiple factors influencing their healthcare experience. It uses regression-based modelling to align overall satisfaction (global satisfaction) with specific aspects of care, ensuring consistency between patient feedback and calculated scores.[41,42]

The key features of MUSA's method are: (a) Global and partial satisfaction: Global satisfaction (Y∗Y^*Y∗) represents overall patient satisfaction, while partial satisfaction (X∗X^*X∗) reflects specific factors like communication, waiting times, and facility quality, both normalized on a scale of 0 to 100. (b) Mathematical framework. Satisfaction is calculated as a weighted sum of criteria (X∗X^*X∗) contributing to global satisfaction (Y∗Y^*Y∗). Errors in overestimation or underestimation are minimized to ensure accurate satisfaction scoring. (c) Normalization and simplicity: Scores are normalized for comparability, and constraints ensuring logical consistency are streamlined with mathematical transformations. Linear programming determines the weights of different satisfaction factors, producing an overall satisfaction score. (d) Identify key criteria: Factors like provider communication, cleanliness, timeliness, and access to information are selected based on their relevance to patient satisfaction. (e) Collect data: Patient feedback is gathered through structured surveys measuring satisfaction across the identified criteria. (f) Analyze data: The method calculates global and partial satisfaction scores and identifies which criteria most influence overall satisfaction, guiding resource allocation and improvement efforts.

The MUSA method provides actionable insights by quantifying overall and specific satisfaction areas. It helps healthcare providers: (a) Highlight key satisfaction drivers (e.g., reducing wait times or improving communication). (b) Strategically prioritize investments and interventions to enhance patient-centered care. (c) Objectively evaluate satisfaction to align services with patient needs.

The MUSA method is valuable for improving healthcare quality and patient satisfaction by balancing simplicity and precision. The main criteria for determining patients' satisfaction were infrastructure, reliability, responsiveness, assurance, and empathy. Several subcriteria were selected for each of these criteria. The satisfaction criteria and subcriteria are provided in table 1.

## RESULTS

Most respondents were females (55.70%), while around 70% were more than 55 years old. Concerning family status, around 80% of the respondents were married. In comparison, most of them (65%) had an education level of up to upper secondary level, while the others were university graduates, some holders of Master of Science (MSc) or Doctor of Philosophy (PhD) diplomas.

Patients were delighted with the services they received from the primary health center (TOMY) they used. According to the MUSA method, the average satisfaction index was high (97.92%). Moreover, the MUSA methodology calculated the criteria weights for the dimensions of satisfaction according to the survey instrument we applied (fig. 2). The criterion with the highest weight index for determining patients' satisfaction was "infrastructures" (33.78%), followed by the criteria of "reliability" (19.61%), "empathy" (18.53%), and "responsiveness" (14.08%). Finally, the criterion with the lowest performance was "assurance" (14.0%).

The action diagram results (fig. 1) indicated that "infrastructures" have an imperative role towards driving patients' satisfaction with the Health Care Center of our study. According to the MUSA methodology, the criteria that are placed in the top-right area of the action diagram are of the highest importance in creating and maintaining

**Table 1.** Patient satisfaction criteria and subcriteria.

| Criteria | Subcriteria |
|---|---|
| Infrastructures | Medical equipment, healthcare building facilities, ease of access, personnel image, waiting areas cleanliness, examination rooms cleanliness |
| Reliability | Time of provided services, clinical examination explanation, treatment explanation, medication explanation |
| Responsiveness | Services completeness (medical-nursing), patient's appointment speed, patient's waiting time, patient's examination total time, operating hours |
| Assurance | Staff knowledge, staff courtesy-behavior, staff support, diagnostic accuracy, effectiveness of treatment, observance of medical confidentiality |
| Empathy | Personal care, the interest for patients, willingness of the staff to listen to you, willingness of the staff to answer your questions |

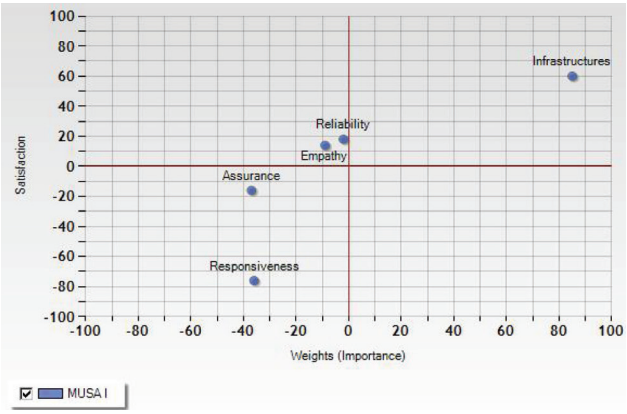


**Figure 1.** Diagram of satisfaction criteria action.

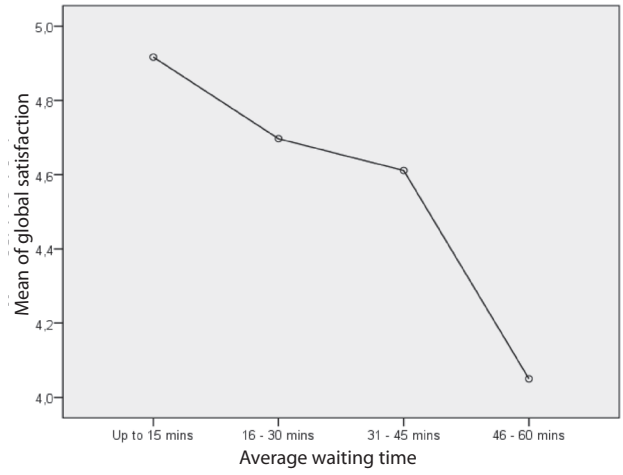


**Figure 2.** Relation between patients' global satisfaction and waiting times.

a competitive advantage against the competition. Furthermore, the criteria of "reliability" and "empathy" are located in the top-left area of the action diagram (transfer resources), meaning that those criteria obtain a high score but are of low importance to the patients; therefore, resources could be moved to strengthen other aspects that drive patients' satisfaction. The criteria "assurance" and "responsiveness" are located in the bottom-left area of the action diagram, which means that these criteria are of low performance and low importance, and no further action is required to enhance them.

As a second analysis step, we investigated the relationship between the patients' sociodemographic characteristics and overall satisfaction by applying Chi-square tests between the variable of "global satisfaction" and the sociodemographic variables of "gender", "age", "education", and "family status". All Chi-square tests were statistically significant at the 95% confidence level (.sig<0.05), revealing a relation between the sociodemographic profile and global satisfaction. More specifically, concerning the variable of "age", the "over 54" category is more satisfied with the provided services than the other categories. Also, concerning "gender", men are more satisfied than women. Concerning the relationship between the variables of "education" and "satisfaction", those at the higher education level (MSc/PhD) and those in the primary education category were more satisfied. Finally, concerning "family status", the category of "married" was more satisfied than the other categories.

As a third analysis step, we turned our attention to an important variable, the patient's waiting time until served, and its relation with global satisfaction, by applying a one-way ANOVA hypothesis test. Results revealed that waiting time was negatively related to patient's satisfaction. As waiting time became longer, patient's satisfaction decreased (fig. 2).

## DISCUSSION

It is evident that in recent years, organizations operating in the healthcare industry, both at national and international levels, have faced ever-increasing demands from their patients, who expect quality services. The measurement of patient satisfaction offers objective information not only about the quality of services offered by a primary health care organization but also about its overall image, structure, and operation, thus contributing to the determination of the advantages and disadvantages the organization applies. For this reason, the quality of services and patient satisfaction measurement are today more important for gaining a competitive advantage. The research presented in this paper illustrated the implementation of a preference disaggregation methodology for measuring patients' satisfaction with the healthcare service provided by a primary healthcare organization in Greece. The basic conclusions of our research could be summarised in the following points. The average global satisfaction index was very high (97.92%). The patients were delighted regarding all the criteria and, especially the "infrastructures" quality (98.41%) and the "reliability" (97.45%).

The high levels of patient satisfaction with the services they received from the primary health centers in Greece are confirmed by corresponding surveys carried out by primary healthcare service providers.[43,44] On the other hand, in recent years, several studies have been carried out in Greece, where patient satisfaction results have ranged at particularly low levels.[45,46] Therefore, for the existence of

substantiated conclusions regarding patient satisfaction with primary health care providers, a series of investigations should be conducted in other primary health centers (TOMY) around Greece. Given the results analysis, measuring patient satisfaction is a strategic tool for a healthcare organization's long-term sustainability and growth.

When patients must be satisfied with their services, the healthcare organizations that want to differentiate themselves need to know what patients want and their complaints. Moreover, the quality of patient service is significantly connected to their satisfaction; therefore, it should be constantly improved and measured.

Based on the above discussion and conclusions, future research has several possibilities. More specifically, we suggest focusing on the following two directions. Firstly, a systematic review of the literature around our research's knowledge objects and employment of a bibliometric analysis. Secondly, an investigation of the relationship between patient satisfaction, employee satisfaction, employee loyalty and patient loyalty.

## ΠΕΡΙΛΗΨΗ

**Ικανοποίηση ασθενών από τις υπηρεσίες υγείας: Μια ολοκληρωμένη ανάλυση ενός πρωτοβάθμιου κέντρου υγείας στην Ελλάδα**

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**ΣΚΟΠΟΣ** Ο προσδιορισμός της συνολικής ικανοποίησης των ασθενών από τις υπηρεσίες που λαμβάνουν από ένα πρωτοβάθμιο κέντρο υγείας στην Ελλάδα και τους παράγοντες οι οποίοι επηρεάζουν την ικανοποίησή τους. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Για τη συλλογή των δεδομένων στην παρούσα ερευνητική εργασία χρησιμοποιήθηκε ένα ηλεκτρονικό δομημένο ερωτηματολόγιο. Η έρευνα διεξήχθη με απλή τυχαία δειγματοληψία από τον Φεβρουάριο έως τον Απρίλιο του 2024. Συνολικά, συλλέχθηκαν 350 ερωτηματολόγια. **ΑΠΟΤΕΛΕΣΜΑΤΑ** Τα αποτελέσματα αναλύθηκαν χρησιμοποιώντας το μοντέλο Multicriteria Satisfaction Analysis (MUSA). Η μέθοδος MUSA είναι ένα μοντέλο τακτικής παλινδρόμησης που βασίζεται στις αρχές της πολυκριτηριακής ανάλυσης αποφάσεων. Τα αποτελέσματα της έρευνας έδειξαν ότι ο μέσος δείκτης ικανοποίησης ανήλθε στο 97,92%. **ΣΥΜΠΕΡΑΣΜΑΤΑ** Λαμβάνοντας υπ' όψιν την ανάλυση των αποτελεσμάτων, προκύπτει το συμπέρασμα ότι η μέτρηση της ικανοποίησης των ασθενών είναι ένα στρατηγικό εργαλείο για τη μακροπρόθεσμη βιωσιμότητα και ανάπτυξη ενός οργανισμού υγείας.

**Λέξεις ευρετηρίου:** Ικανοποίηση, Ικανοποίηση ασθενών, Μέθοδος MUSA, Πολυκριτηριακή ανάλυση, Υπηρεσίες

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