Expectations and perceptions of Greek patients regarding the quality of dental health care

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Abstract

Objective. The aim of this study was to investigate the perceptions and expectations of patients regarding the quality of dental health care they received and the criteria they used to select a dentist.

Design. Descriptive study.

Methods. Two questionnaires referring to the expectations and the perceptions of dental health care were handed to patients. Likert-type scales were used to evaluate the characteristics examined. These characteristics have been classified in four quality dimensions: 'assurance', 'empathy', 'reliability' and 'responsiveness'.

Study participants and setting. Two hundred consecutive patients who visited the Dental Clinic of the School of Dentistry, University of Athens, Greece, in 1998–1999.

Results. The patients' top priority was adherence to the rules of antisepsis and sterilization. Women of the middle and lower socio-economic groups were more demanding than men of the same groups, while men of the upper socio-economic group appeared to be more demanding than women ($P = 0.02$). Their perceptions of the dental service provided reflected their satisfaction regarding the adherence to the rules of antisepsis and sterilization, but also showed their moderate satisfaction regarding most of the other characteristics and their dissatisfaction regarding information on oral health and hygiene.

Conclusion. Expectations and demands regarding empathy (approach to the patient) and assurance were placed at the top of the patients' priorities. A highly significant quality gap was observed between the desires of the patients and their perceptions ($P < 0.01$) and the largest gap was noted concerning information they received about oral health diseases. The largest quality gap was also observed in characteristics regarding responsiveness.

Keywords: dental, expectations, health care, patients, perceptions, quality

The quality of service is an undeniably crucial factor today, regardless of the type of service rendered. The world's economy has largely become an economy of services, and service quality is a central issue for any kind of business. In the 1980s the *Wall Street Journal* was already reporting on health care services on the first page [1]. In that article the author wondered about hospital services, bad diagnoses, unnecessary treatment, overprescription of drugs and lab-test errors. Today all these issues still sound disappointingly familiar.

Superior quality is the desirable target in the sensitive field of health care. It is essential that health care services are of a high quality, and that the patients are aware of this achievement. Word of mouth is the ultimate goal for a doctor as it is the most obvious proof of quality in health care.

How do patients evaluate the quality of the services provided? Do they realize the necessity of emphasis on communication, information and co-operation with their dentist? Do they directly make a general evaluation or do they take into consideration the procedures by which dental care is provided? Do they assess specific aspects of dental service before arriving at an overall evaluation and, if so, which facets or dimensions do they evaluate? Which factors do patients consider the most important when choosing a

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dentist? And finally, what do patients consider to be optimal quality of dental service? The aim of this study was to attempt to elucidate this relatively unexplored side of the dental health care system: the quality of dental health care.

The key to achieving and ensuring good service quality is to meet or exceed customers' expectations about the service. Service quality therefore, as perceived by customers, can be defined as the extent of discrepancy between the customers' expectations or desires and their perceptions [2]. Dental service quality also consists of (i) ensuring oral health, (ii) fulfilling the patients' desires, (iii) satisfying their needs, and (iv) providing optimal solutions regarding function, aesthetics and maintenance in a most acceptable procedure that would cause the least possible harm or inconvenience to the patients.

It is clear from the aforementioned definition that an evaluation of dental health care quality may be subjective. Thus the purpose of the dentist is to exceed the highest expectations, taking into account the limitations of the treatment plan in every specific case as well as scientific advances and technical limitations.

The criteria used to evaluate the expectations and desires of the patients have been classified in four quality dimensions according to their content as well as according to similar criteria used by other researchers [2]. The four dimensions consist of expectations regarding assurance, reliability, responsiveness and empathy.

The purpose of this study was to investigate (i) the expectations of patients concerning dental health care, (ii) their perceptions of the dental health care provided, and (iii) the criteria they set for the choice of dentist.

Materials and methods

Study participants and setting

Two hundred adult dental patients [93 men (46.5%) and 107 women (53.5%), aged 18–80], who visited the Dental Clinic of the School of Dentistry (University of Athens, Greece) for dental treatment participated in this study, which took place during the academic year 1998–1999. The study was limited to the periodontal clinic. The majority of the patients who visit the clinics of the School of Dentistry of Athens are referred to this clinic after treatment of urgent oral problems and before any kind of dental restoration and/or prosthetic treatment. Stefaniotis *et al.* [3] reported that 78.68% of all patients visiting the Dental School of Athens are referred to the periodontal clinic. In this clinic patients receive information regarding oral health and oral diseases (i.e. gingivitis, periodontitis), oral hygiene training and periodontal treatment. The patients were selected if (i) their treatment demanded at least two sessions in order to complete the two questionnaires at different sessions, (ii) they had visited their dentist at least once in the last 2 years, and (iii) this was the first time they had come to the clinic for treatment of any kind. The patients who fulfilled these criteria were selected for the study in a consecutive order. The subjects were divided into groups according to (i) age (18–25 years old,

18.5%; 26–35 years old, 16.0%; 36–45 years old, 13.5%; 46–55 years old, 29.5%; and above 56 years old, 22.5%) and (ii) socio-economic status [upper socio-economic group (group A), 28%; middle socio-economic group (group B), 24% and lower socio-economic group (group C), 48%] (Beals' simplified classification [4] of the London Registar's general classification of occupations [5]).

During the first session of oral health training and treatment, each patient was handed a 14-item questionnaire. Half of these questionnaires regarded perceptions and half of them regarded expectations of dental service. The second questionnaire was given at least one week later, at a different session. In order to control for possible carry-over effect [6], half of the patients were given the questionnaires in the sequence: expectations, perceptions, and the other half were given the questionnaires in the sequence: perceptions, expectations. A carry-over effect occurs when the first testing session influences scores in the second one. This may happen if test-takers remember the answers they gave the first time they took the test. Likert-type scales were used for the evaluation of the examined characteristics [7]. The expectations questionnaire assessed patients' demands and expectations of the desired dental care and consisted of 14 Likert-type questions. The perceptions questionnaire assessed patients' perceptions of the dental care provided and consisted of eight Likert-type and four multiple-choice questions. The questions pertained to possible dentists' qualities and qualifications and existed in both questionnaires. Patients gave a mark (from 1 to 10) for each characteristic in the expectations questionnaire according to how important and necessary they considered it, and in the perceptions questionnaire according to how satisfied they were with their dentist and to what degree he/she possessed each characteristic.

The characteristics examined have been classified into four quality dimensions of dental health care: assurance, reliability, responsiveness and empathy according to Zeithaml *et al.* [2]. Each of these dimensions consists of certain facets that define and explain the above-mentioned categories. The classification of the four dimensions examined and their facets is as follows:

Assurance: freedom from danger or risk (i.e. from possible damage or infection by use of antiseptics, sterilization, use of disposable gloves and mask), feeling of security, sincerity, confidence, consistency.

Reliability: scientific qualification, up-to-date information and education in recent technology, ability to perform the promised service accurately and without mistakes, reference to another specialized dentist or physician when necessary.

Responsiveness: willingness to help patient, provision of prompt care, provision of adequate information on oral health and hygiene.

Empathy: communication, making an effort to know the patient's needs, listening to the patient, understanding and showing interest, being available and approachable to the patient and amenable to contact, keeping patient informed

Table 1 Expectations of patients surveyed regarding the quality of dental health care services in descending order of importance

Expectations and demands	Mean $\pm$ SD[1]
1. Adherence to rules of antisepsis and sterilization	9.87 $\pm$ 0.52
2. Use of disposable gloves	9.71 $\pm$ 0.98
3. Careful and scrupulous examination and proper diagnosis	9.65 $\pm$ 0.87
4. Information regarding the oral health problem and the treatment plan	9.50 $\pm$ 1.00
5. Creation of a feeling of security and tranquillity, and punctuality in appointments	9.47 $\pm$ 1.16
6. Understanding and sensitivity in the dentist's approach	9.41 $\pm$ 1.28
7. Use of mask	9.39 $\pm$ 1.48
8. Information regarding oral diseases and preventive methods so as to maintain oral health	9.36 $\pm$ 1.34
9. Reference to other specialized dentist/physician when necessary	9.27 $\pm$ 1.40
10. Disposition of sufficient time for communication	9.15 $\pm$ 1.60
11. Continuous and up-to-date information, education in recent technology and procedures at national and international congresses and seminars	9.02 $\pm$ 1.95
12. Respect for and application of the instructions suggested by the dentist	8.68 $\pm$ 1.88

[1] SD, standard deviation

(in language that he/she can understand) about their problem and treatment plan.

These dimensions were estimated by grouping pertinent questions from the questionnaire and forming scales to be used in subsequent analysis.

Statistical analysis

Statistical significance was assessed using the *t*-test for dependent samples and multivariate analysis of variance for repeated measures. For the assessment of the internal reliability of the scales used (quality dimensions), Cronbach's alpha was calculated. Where only two variables were combined in a single scale, a Pearson's correlation coefficient was calculated for the same purpose. Wilks' lambda was used as the main statistical indicator in the multivariate analyses. All analyses were carried out by an independent statistician using the STATISTICA software [8].

Results

Of the total sample, 97.5% visited a general dentist while only 2.5% visited a specialized dentist. Only 2% of the sample said that they had been referred to a specialized dentist for the treatment of a certain oral health problem.

Expectations and demands

Analysis of the findings showed that the patients' top priority was the adherence to rules of antisepsis and sterilization (Table 1, Figure 1). Patients also considered characteristics 2–11 (Table 1) absolutely necessary (in order of descending importance). It was also considered very important that the dentists themselves respect and apply the instructions they suggested to the patients. When patients were asked if they prefer a specialized or general dentist, there was a small but statistically insignificant preference for specialized dentists ($P = 0.35$, Table 2).
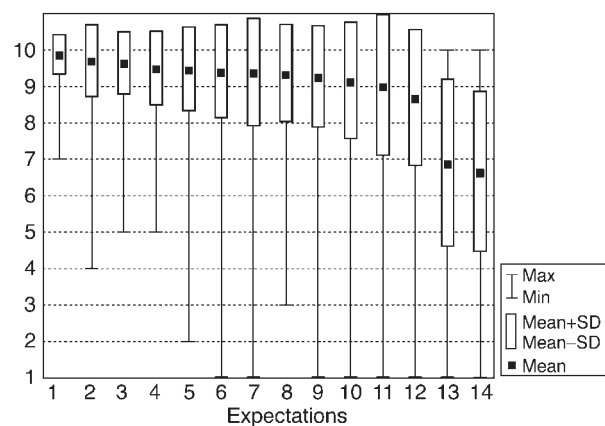

Figure 1 Expectations of patients regarding the quality of dental health care services, in descending order of importance. For definitions of numbered expectations refer to Tables 1 and 2.

Table 2 Expectations of patients surveyed regarding their preference for a specialized or general dentist

Expectations and demands	Mean $\pm$ SD	t (t-test)[1]	P level[1]
13. Specialized dentist	6.89 $\pm$ 2.30	–0.94	0.35
14. General dentist	6.65 $\pm$ 2.21		

[1] *t*-value and significance level showing preference for a specialized or general dentist ($n = 200$, 199 df).

Expectations and demands regarding empathy (characteristics concerning the way the dentist approaches the patient) were placed at the top of patients' priorities (Table 3).

Assurance was considered to be the second most important dimension. Patients considered antisepsis and sterilization

Table 3 The four dimensions of expectations and perceptions regarding dental health care services and their importance to the patients surveyed

	Expectations mean ± SD	Perceptions mean ± SD	Quality gap[1] t (t-test)	P level	Standardized alpha[2]
Responsiveness	9.33 ± 1.12	5.32 ± 2.43	21.91	< 0.01	0.75
Empathy	9.46 ± 1.00	5.62 ± 2.81	18.14	< 0.01	0.53[3]
Reliability	9.31 ± 1.04	5.63 ± 2.39	20.56	< 0.01	0.57
Assurance	9.41 ± 0.86	8.79 ± 1.68	8.97	< 0.01	0.63

[1] The difference between the scores for expectations and perceptions. [2] The internal reliability was assessed using Cronbach's alpha (standardized alpha). [3] For the assessment of the internal reliability of empathy, Pearson's correlation coefficient was evaluated because empathy consists of only two variables.
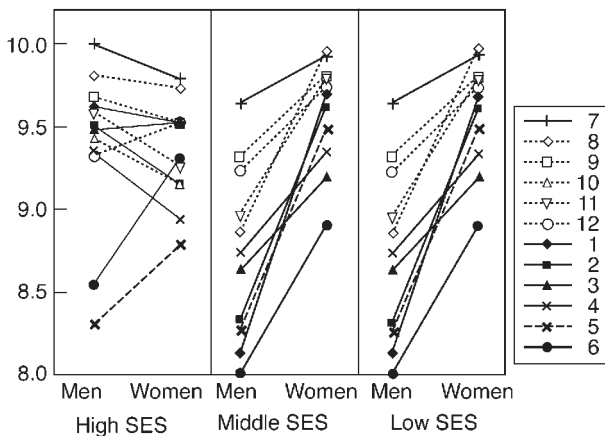

Figure 2 Mean levels of surveyed patients' expectations by gender and socio-economic status (SES). For definitions of numbered expectations refer to Table 1.

(and use of disposable gloves) indispensable for the prevention of infectious diseases. Responsiveness (willingness to help, prompt care, etc.) was the third most preferred dimension, while reliability (dentist's qualification and efficacy) came fourth (Table 3).

In order to assess the internal reliability of the scales (dimensions), Cronbach's alpha was calculated (Table 3). Responsiveness had a relatively satisfactory Cronbach's alpha value, while the other two dimensions demonstrated moderate internal reliability. A moderate Pearson correlation coefficient was obtained for the empathy scale, which comprised only two items.

The comparison between men and women in relation to their socio-economic status showed that women of the middle and lower socio-economic groups were more demanding than men in the same groups, while in the upper socio-economic group men appeared to be more demanding ($P = 0.02$, Figure 2). No differences were observed between genders when estimated independently of socio-economic status ($P = 0.08$). No differences were found either between the

three socio-economic groups when they were estimated independently of gender ($P = 0.12$).

Perceptions

The perceptions of patients regarding the dental service provided are shown in Table 4 and Figure 3. Patients were almost completely satisfied with respect to adherence to rules of antisepsis and sterilization. They were very satisfied, in a descending order, with characteristics two to four (Table 4, Figure 3) and fairly satisfied with characteristics five to seven. Patients were not satisfied and declared that they had not been informed either about the two most common oral diseases, gingivitis and caries, or about the preventive methods used in maintaining good oral health.

Only 55% of the patients reported that their dentist always used disposable gloves, and 9% said that their dentist used a mask; 93% of the sample replied that they were put off at least once by the dentist's breath.

Regarding the perceptions of patients for each category, patients were satisfied with characteristics concerning assurance and were fairly satisfied with reliability, empathy and responsiveness (Table 3).

Quality gap

There was a statistically significant difference between the desires and expectations of the patients compared with their perceptions of the dental service provided (Table 5, Figure 4). A significant quality gap was observed between all characteristics, with the largest gap concerning information received about oral health diseases and the preventive methods that can help maintain oral health. A significant difference was observed in all the characteristics examined, as shown in a descending order, in Table 5 and Figure 4.

The largest quality gap was observed in characteristics regarding responsiveness followed by empathy and reliability, while the smallest gap hopefully concerned assurance (Table 5).
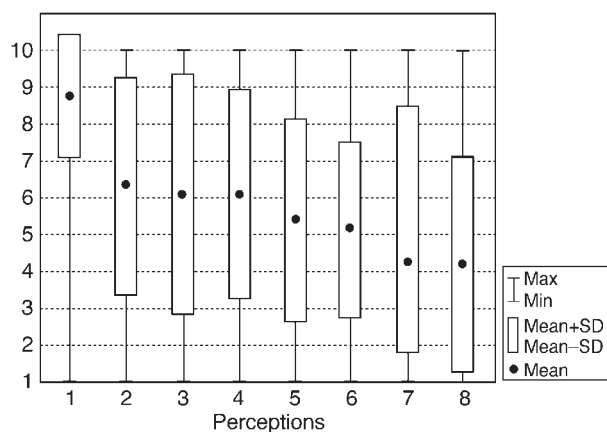
Table 4 Perceptions of patients surveyed regarding the quality of the dental health care services provided in descending order of importance

Perceptions	Mean $\pm$ SD
1. Adherence to rules of antisepsis and sterilization	8.79 $\pm$ 1.68
2. Creation of a feeling of security and tranquillity and punctuality in appointments	6.37 $\pm$ 2.92
3. Careful and scrupulous examination and right diagnosis	6.12 $\pm$ 3.22
4. Understanding and sensitivity in the dentist's approach	6.10 $\pm$ 2.82
5. Disposition of sufficient time for communication	5.41 $\pm$ 2.72
6. Continuous education in recent technology at national and international congresses and seminars	5.14 $\pm$ 2.36
7. Information regarding the oral health problem and the treatment plan	5.13 $\pm$ 3.32
8. Information regarding oral diseases and preventive methods so as to maintain oral health	4.20 $\pm$ 2.95

Table 5 Quality gap between expectations and perceptions regarding the quality of dental health care services in descending order and the significance level of the quality gap[1]

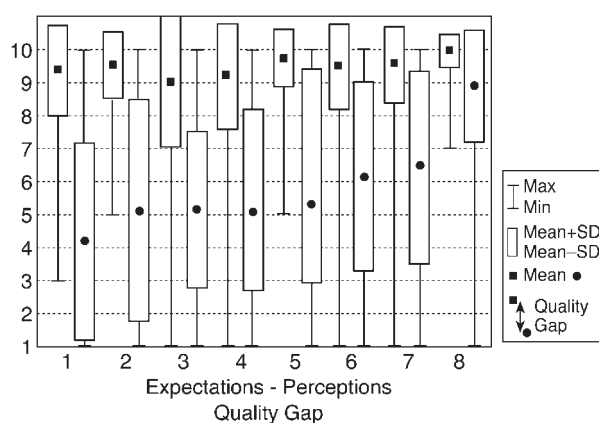| Quality gap	t (t-test)	P level
1. Information regarding oral diseases and preventive methods so as to maintain oral health	23.89	< 0.01
2. Information regarding the oral health problem and the treatment plan	18.08	< 0.01
3. Continuous and up-to-date education in recent technology at national and international congresses and seminars	18.68	< 0.01
4. Disposition of sufficient time for communication	17.05	< 0.01
5. Careful and scrupulous examination and right diagnosis	15.07	< 0.01
6. Understanding and sensitivity in the dentist's approach	15.15	< 0.01
7. Creation of a feeling of security and tranquility and punctuality in appointments	14.16	< 0.01
8. Adherence to rules of antisepsis and sterilization	8.97	< 0.01

[1] The statistical analysis applied for assessment of the quality gap is t-test for dependent samples.

Figure 3 Perceptions of patients surveyed regarding the quality of the dental health care services provided in descending order of importance. For definitions of numbered perceptions refer to Table 4.

Figure 4 Quality gap determined by the difference between the expectations and perceptions of patients regarding the quality of the dental health care services provided in descending order of importance. For definitions of numbered expectations–perceptions refer to Table 5.

Discussion

Health care

Service quality is more difficult to evaluate than the quality of tangible commodities. Therefore, the criteria used to evaluate service quality may be more difficult to comprehend. Patients' assessment of health care quality is more complex than the assessment of other services because:

(i) Utilizing health services is characterized by uncertainty.

(ii)   Patients cannot schedule the use of health services.

(iii)   Usually a patient is not in a position to know when, where and how he/she will need health care [9].

(iv)   Utilizing health services is undesirable and creates insecurity and stress.

(v)   Health services are 'heterogeneous'; various and different treating methods and drugs can be used that are not comparable, unlike certain goods.

(vi)   The medical profession is considered to be one of the most protected and controlled; there are limitations in the production of health care in order to protect the population [10].

Finally, the disparate information and the asymmetrical distribution of knowledge between the doctor and the patient set the health care services apart from any other kind of services [11,12].

Dental health care

Dental health care quality is also more difficult to assess than material goods. Dental services differ according to their provider, the recipient's needs and the progress of science and technology during the period in which these services are provided. In addition, there are criteria that are not obvious and cannot be evaluated without the assistance of the dentist. A patient, for instance, cannot evaluate the quality of equipment and materials in use. In comparison with other medical services, dental health care assumes a more personal, intimate and lasting contact with the patient, because even the simplest dental procedure demands a long-lasting session.

On the other hand, as has been reported by researchers in the UK [13], patients are now more dentally aware and demanding and, to be successful, practices must keep pace with the expectations of their patients. The need for improvement of dental health care quality, as well as increase of dental patient's satisfaction, has also been noted in Denmark by Poorterman *et al.* [14]

Empathy

According to the findings of this study, the characteristics of the dentist's approach, based on communication, understanding and showing sincere interest (empathy), were placed at the top of patients' priorities. This preference reflects the importance of co-operation and the creation of a good dentist–patient relationship in order to control the fear and stress dental practice causes. Dental fear has been found to be one of the most common fears [15–17]. Patients' perceptions, however, showed they were not sufficiently satisfied with their dentist's approach. This is in accordance with reports of an observed lack of communication in the US with the dentist and the lack of awareness of patients' behaviour [12].

The dentist–patient relationship is a sensitive one, which concerns an important and sensitive part of the body, the oral cavity [18]. This is probably the reason why patients do not change their dentist often. They regard their dentist as the carrier of their oral health and consider him/her the proper person to deal with their oral health problems. Oral health problems are usually functional, concern aesthetics and have both social and economic dimensions [18].

Time spent establishing a relationship based on confidence and co-operation between patients and dentists/physicians is usually insufficient. In the mental health department of the St George Hospital in Australia, the majority of the patients stated that they were not satisfied with the approach of the staff and nobody had explained to them their diagnosis in a way they could understand [19]. Dentists and physicians should recognize the value of their relationship with the patient. They should also be perceptive concerning behavioural patterns that would improve such relationships, in order to establish and strengthen the patient's trust in them [20].

Effective communication between the physician/dentist and the patient affects the quality of their relationship and increases the satisfaction of the patient with the health service provided [21]. Kasteler *et al.* [22] found that the main reason that patients decide to change their physician is an unsatisfactory personal relationship, rather than the quality of the health service.

Assurance

Assurance was the second most preferred dimension. This preference was anticipated since the recent rise in the prevalence of infectious diseases, such as hepatitis and HIV infection, that can be transmitted within a dental clinic. Patients were satisfied with characteristics concerning assurance. This finding shows that dentists are aware of the transmission risk of infectious diseases and respect the antisepsis and sterilization rules.

Reliability

Continuous and up-to-date information and education in recent technology has been ranked as absolutely necessary. Sluijs and Dekker [23] found continuous education to be the highest priority among patients. People who need to use health services hope and demand that their care reflects the most up-to-date knowledge about what works best [24].

There was a small, statistically insignificant preference as to whether the patients desired to choose a specialized dentist or not. In addition, only 2.5% of the patients examined had visited a specialized dentist. Specialization was the last priority in the sample of the patients examined. This last observation is quite impressive, because it opposes the notion and trend towards specialization and poses a question about the necessity of massive specialization in dentistry. Specialization is not considered by the sample questioned as the decisive factor in choosing a dentist. The objective of oral health care is to improve the quality of the dental services provided and can be achieved effectively by the general dentist.

Responsiveness

The majority of the patients stated that they were uninformed about the two most common oral diseases, gingivitis and caries. Neither had dentists informed patients about the

preventive methods that they can apply in order to maintain good oral health. In a study in Australia carried out in the mental health department, when doctors were asked about providing information to their patients, they reported that they did, while patients answered that they had not adequately received such a service [19]. It is essential that the patient is aware of the offered service in order to take full advantage of it.

Quality gap

The largest quality gap was observed in characteristics regarding responsiveness and empathy. Medical and dental schools should probably place more emphasis on integrative treatment and skills such as 'bedside' manner and not solely on mechanistic treatment and restorative dentistry. Regrettably, they do not place the same emphasis on the human and social aspect of the dental/medical profession. Dentists/physicians should show interest and devote time to listen and learn about the patients' medical and dental problems. Getting closer to the patient and devoting time to communicate are the decisive criteria to gain a patient's confidence and to improve the quality of the health services provided.

Patients expect empathy and responsiveness to their problem, but in many instances their dentist/physician fails to rise to the circumstances. Because the doctor–patient relationship is clearly personal and based on trust, effort should also be focused on changing the patients' stance towards the doctor (i.e. as a restorative technician rather than a therapist in whom they have chosen to place their trust). As a result, this resistance forces the dentist/physician to compromise themself, underestimating both the importance of their approach and overall duty as a therapist.

A statistically significant but less important quality gap was observed in characteristics regarding assurance. Patients were satisfied with their dentists' adherence to rules of antisepsis and sterilization, while at the same time only 55% of the dentists always used disposable gloves. A hypothesis to explain this finding is that these patients were probably not properly informed about the importance of gloves. The majority of patients examined belonged either to the middle or the lower socio-economic groups (groups B, 24% and C, 48%). Patients of lower socio-economic status may not have access to information regarding oral health or may not consider motivation concerning oral health among their priorities. For that reason, they may not correlate the rules of antisepsis and sterilization with the use of gloves. It would be interesting to investigate in a different study the possible association of the socio-economic status of the patients with the quality of the dental health care provided.

A smaller gap was observed in characteristics regarding reliability (scientific qualification of the dentists and up to date information and education in recent technology). It should be emphasized, however, that this judgement was based on patients' perceptions of the dentists' qualifications, as the patients did not have any knowledge of these qualifications.

The findings of this study pertain to the questioned sample that visited the periodontal clinic of the Dental School of the University of Athens. There is some reservation whether these results would reflect the expectations and perceptions of all the patients that visit the Dental School of Athens and the dental patients that visit dentists in their private practice in Greece. For that reason it would be useful to investigate the quality of dental health care and how it differs when it is provided by dentists in more or less affluent areas and by public health institutions.

Conclusions

Empathy (approach to the patient) was the most important dimension that patients desire to be fulfilled. In order of descending importance there follows assurance, responsiveness and reliability. Specialization was not considered by the patients questioned as a decisive factor for choosing their dentist. Patients were satisfied by the assurance provided by dental health care. There was a large quality gap regarding responsiveness, empathy and reliability reflecting the need to improve the quality of the dental health care. The examined patients considered that they were not sufficiently informed about oral diseases (gingivitis and caries) and the preventive methods that help maintain oral health.

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