



Factors Affecting Fee-Setting for Dental Services in Iran's Private Sector: Dentists' Perspective

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Abstract

Background and Objectives: In Iran, the private dental sector is the main provider of dental services, however, the price of services that are charged by them is unclear. This study aimed at evaluating the factors affecting fee-setting for dental services delivered by dentists in the private sector and the relative value of services.

Methods: In this cross-sectional study, the census sampling method was used among dentists working in the private sector of Kerman city, Iran. The data were collected through a researcher-made questionnaire, the validity and reliability of which were established. Descriptive statistics and Pearson's correlation coefficient were used to analyze the data.

Results: Of the 252 qualified dentists, 147 (58%) participated in this study, of whom 61.5% stated they had reduced their prices to attract more patients and 67.4% mentioned that there is a competition between dentists in attracting more patients. The tariffs applied by the dentists were within the range of government approved tariffs. After the dentist's wage (42.3%), the most important factors that affected tariff setting included office rent (18.6%), raw materials (15.2%) and staff's salary (12.6%). Disease severity, dentistry error, dentist's skill and visit time length should be considered in determining the relative value of services and setting a justified and fair tariff.

Conclusions: It is necessary to take appropriate measures by dental health authorities to increase the competition between private dentists in order to decrease prices in favor of patients. Also, due to differences in performance, experience and materials used by dentists and other factors, it is necessary to set maximum and minimum values for tariffs.

Keywords: Dentists, Private Sector, Fees

1. Background

Dental services in Iran are mainly provided by the private sector. In the public sector, the Social Security Organization (SSO) in its own hospitals and the Armed Forces' Medical Services Insurance Fund (AFMSIF) have covered some services for their personnel. Other people are covered by Iran Health Insurance Organization (IHIO), through which an insured can receive only preventive dental services from public health centers (1). This is while more than 80% of the country's dental services are provided by the private sector (2), and due to the limited services covered by insurance companies, more than 90% of dental costs are paid by people themselves (3). There are currently more than 28,000 active and specialized dentistry practitioners in Iran (about 1 dentist per 3,000 individuals), from whom only 10% work in the public sector

and 79% provide private services (4).

On the other hand, according to the national dental health survey in 2001, the dental care needs are very high. For instance, the average total decay-missing-filled teeth (DMFT) was 4.3 and 11 for individuals aged 18 and 35 - 44 years, respectively. In this index, decayed and missing teeth had the highest share. Also, 53% of people aged 35 to 44 years had deep periodontal pockets (5, 6).

Increasing dental decay definitely raises the need for access to dental care. Since the public sector in Iran has limited facilities and resources for responding to dental needs, the demand for private dental care has augmented. Due to this high demand for private sector services, prices are also rising. Currently, private dentists do not consider the public sector as their rival due to the poor management in the government. A study conducted in Austria

indicated that private and public dentists in a region are good substitutes for each other, when one increases the need for the other decreases. Thus, there is a competition between them (7). Another study in Finland indicated that dentists and denturists consider each other as competitors, and dentists/denturists who refer patients to the other group receive patients from them (8).

In the private sector, both price levels and pricing of some services are usually determined by dentists, that is, prices are based on cost per item or the time spent for the procedure. Every year, the Ministry of Health announces new tariffs for health services, including private dental services, with the approval of the Cabinet of Ministers. However, how much these tariffs are being implemented is a matter of question, and it seems that private dentists do not agree much with these tariffs.

Despite the significant role of the private sector in financing and providing dental services, as well as the increasing costs of services, the pricing of services in this sector has not been examined and the factors affecting the pricing of services in the private sector have not been investigated. Many studies have been conducted in the field of tariff and health services in Iran, but the focus of these studies has been mainly on areas such as medical treatments and hospital services (9, 10).

According to the search conducted by the research team among the national and international databases, no definite study by Iranian researchers was found on the cost of dentistry, its pricing and other related issues, including the establishment of price competition between dentists to reduce the price of services, and as a result, increase access of the poor to the services, dentists' view on tariffs of services, and the impact of costs on pricing of services. Therefore, this is the first study in Iran that assesses the factors affecting fee-setting for dental services.

Some health care providers charge patients with prices that are more than tariffs, or ask for under the table money when they consider tariffs unrealistic, unfair and inadequate, which imposes more costs on patients (11, 12). In a qualitative study that explored the reasons for informal payments among different specializations in Iran, all participants stated that unrealistic tariffs are the main cause of the demand for informal payments from patients (13). Thus, reforms are needed, specifically in the setting of realistic prices for services, and if no action is taken in this regard, informal payments will continue to increase, which harms the mutual trust between dentists and the general public.

Setting tariffs for health services affects justice, efficiency, quality and accountability in the health system, and if not done correctly, it will undesirably affect the continuation of service delivery (14, 15). The most important chal-

lenges of pricing and setting tariffs for health services is the lack of theoretical and practical knowledge in this area, which has always been neglected. Considering the above arguments, the purpose of this study was to explore the pricing and tariffs of dental services in the private sector of dentistry and the factors that affect the pricing and relative value of dental services. Also, the status of competition in the private sector of dentistry should be considered in order to reduce prices, increase the quality of services and attract more patients.

2. Methods

2.1. Data Collection

In this cross-sectional study, the research population comprised of all private dentists working in the city of Kerman, Iran. The participants were selected using the census sampling method, thus, all of the mentioned dentists were entered to the study. According to the latest statistics and data of the Medical Council of Kerman Province (until May 2017), the number of general dentistry practitioners working in the private sector of Kerman is 252 dentists. The researchers acquired data about demographic characteristics of the private dentists including their number, name, address, phone number, and specialty through corresponding between Kerman University of Medical Sciences and Medical Council of Kerman Province. The exclusion criterion was the dentists who work in the public sector, because the overhead, material and equipment costs are not completely important for public dentists. In other words, no matter what equipment used, the salaries and benefits of these dentists are stable and have no relation with their efficiency.

2.2. Measurements

Data collection was performed using a researcher-made questionnaire with closed-ended questions to obtain quantitative data. This questionnaire had several sections. In the first section, the demographic information of the dentists was collected. In the second section, factors affecting the tariff of services were examined. In the third section, the prices of six selected dental services applied by the dentists were investigated, and finally, the relationship between the factors affecting the relative value of dentist's visit and the setting of fair and realistic tariffs for the services was examined.

In order to confirm face validity of the questionnaire, difficulty level, inappropriateness, ambiguity in the phrases or failure in the meaning of the words were assessed by 20 dentists of the target group. In order to confirm content validity of the questionnaire, we asked

a panel of professors to present their written views after completely reading the questionnaire. Their views were applied in the questionnaire. For the quantitative assessment of content validity, relative coefficient of content validity (CVR) was used. Finally, to confirm reliability, the test-retest method was used, such that 10 participants were selected and the questionnaires were distributed among them and then collected after being completed. Moreover, 15 days after the first test, a second test was performed in the same group of participants. Using SPSS software version 22, the Cronbach's alpha coefficient was calculated to be 0.78.

The research team members were trained on how to attend the dentistry clinics and complete the questionnaire. The questionnaires were anonymous as they contained information about the income of the dentists. This was important as we aimed to gain the dentists' trust in answering the questions correctly in the light of their career issues.

2.3. Analysis

Descriptive statistics (i.e., percentage, mean, and standard deviation) were used to identify the factors affecting the setting of tariffs for dental services and other variables in this study. Pearson's correlation coefficient was used to determine the correlation between the factors affecting the relative value and setting of realistic tariffs for services. There was no missing value in the study. STATA software 13.1 was used to analyze the data. We used Kolmogorov-Smirnov test to assess the normality of the data. P value less than 0.05 was considered statistically significant. Before collecting the data, a written approval was obtained from the Ethics Committee of Kerman University of Medical Sciences (code of ethics IR.KMU.REC.1396.1619).

3. Results

Of the 252 general dental practitioners working in the private sector of Kerman city, 147 (58%) dentists participated in this study, of whom 73.2% were male and 26.8% were female. The majority of the dentists were within the age group of 34 - 45 years, and 94.6% of the dentists stated that patients are informed of the price of the services before receiving them. This information is either on display in the clinics or patients acquire the information by asking the dentist directly, thus, it is possible for patients to compare the price of dental services provided by different dentists.

Regarding the status of competition among dentists, 56.6% of the dentists stated that there is a dental clinic at a distance of 100 meters from their office, therefore, it is

potentially possible to compete with each other to attract patients and thereby, reduce the cost of services to the benefit of patients. Also, 61.5% of the dentists stated that their prices are reduced to the extent possible in order to attract more patients, and 67.4% of dentists stated that there is a competition between dentists to attract more patients. Most dentists (53.1%) claimed that they set prices through consultation with other dentists and not on the basis of tariffs set by the government. With regard to the effect of the health promotion plan on oral health and dentistry, 100% of the dentists stated that this plan did not affect their performance (Table 1).

Figure 1 provides a comparison between the prices set by private dentists in the city of Kerman for six selected services and the tariffs approved by the Cabinet of Ministers in the years 2016 and 2017 (16). Accordingly, the tariffs for all the services approved by the Cabinet of Ministers in 2017 were more than those in the year 2016. However, with regard to the average tariffs that private dentists in Kerman have set for their services, the tariffs for one-level amalgam restoration, one-level composite restoration, and single-channel root canal treatment were higher than the tariffs set in 2017. Furthermore, the tariffs for anterior teeth extraction, scaling and brushing, and third molar surgery in hard tissue were less than the tariffs set in 2017 (Figure 1).

Table 2 shows the factors affecting the pricing of each dental service from the perspective of the studied dentists. Accordingly, the most important factor was dentists' wages (42.3%) and the least important factors were the cost of water, electricity, gas and telephone bills (4.7%; Table 2).

Table 3 presents the Pearson correlation coefficient results between the variables of dentistry skill, time length of visit, dentistry error and severity of the disease. These variables are important as they help to set the relative value for dental services. For example, higher or lower skills of dentists affect visit time and dentistry error, or a disease with different severities can affect the dentist's error and requires longer visits and various services.

Accordingly, as Table 3 exhibits, there was a significant direct relationship between the severity of disease and dentistry error, as well as the severity of the disease and visit time, but there was a significant inverse relationship between the dentist's skill and visit time and between dentist's skill and dentistry error (Table 3).

4. Discussion

According to the results, patients are aware of prices before receiving services, and it is possible for patients to compare the price of services with other practices. According to the British Free Trade Office, patients in private dental centers should receive full information on fees and tar-

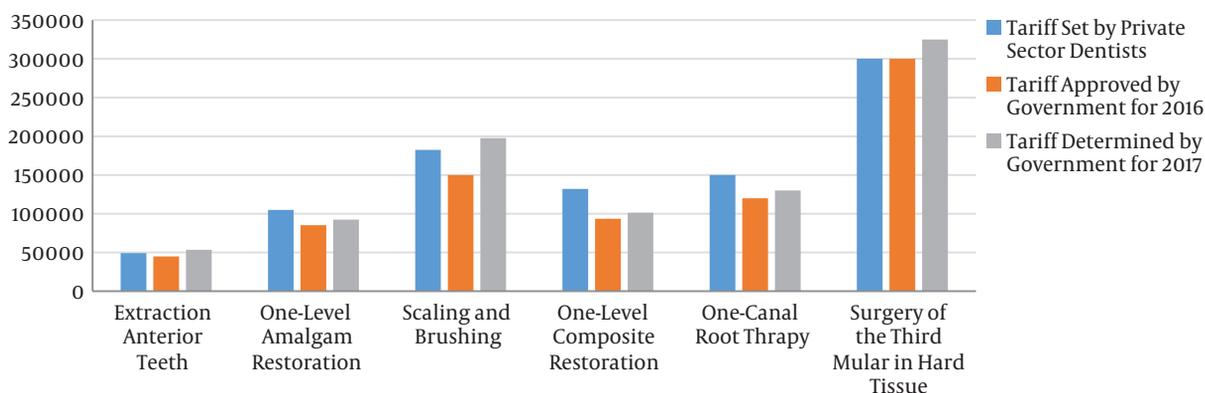


Figure 1. Comparison between the tariffs set by private dentists and governmental tariffs approved for the private sector in 2016 and 2017

iffs for services. This information should not only include the list and the price range for the services, but also how the prices have been calculated. The more transparent the structure of tariffs, the less probability of misunderstanding or argument between the dentist and the patient would be (17).

According to the findings, currently, dental services' tariffs that are accepted by dentists are not official or based on national tariffs, but they are customary tariffs. In other words, among dentists, a minimal and maximal price has been accepted for each service on a customary basis. This is while the dental health of people as a statutory domain should not be left based on custom, because people's dental care and access to services will be affected by it even more. In the general policies declared by the Supreme Leader, it has been stated that the costs and activities should be clarified (18), thus, tariffs should be set on the basis of realistic prices in order to be accepted by all stakeholders. In addition to setting tariffs, the most important issue is monitoring the good implementation of tariffs by the Ministry of Health as the main trustee, and then the insurance organizations and the medical system.

The results indicated that 70.1% of the participants stated that they set their prices after consultation with other dentists, and only 17.7% of them referred to the approved tariffs by the cabinet. According to a study conducted in England, the majority of dentists (82%) stated that they set the price of services through consulting with their colleagues.

According to the results, the majority of the participants stated that dentists who use higher quality materials could charge patients higher prices. In this study, dental materials and equipment accounted for about 15.2% of the dental services' tariffs, which has a great effect on the net income of dentists. However, dental materials with poor

quality should be essentially removed from the market or be banned, hence not charging different tariffs for a specific service.

Based on the results, Health Sector Evolution Plan (HSEP) has essentially ignored the domain of dental care and does not address this area. This is while HSEP has been designed with the main goal of providing health insurance for all Iranians and improving the access of urban areas to health services (19). A previous study in Iran indicated that health insurance organizations have little contribution to lowering socioeconomic inequality, such that the poor or people with public health insurance have no special advantage in the utilization of healthcare services over others (20).

Considering that private dentists are the main providers of dental services in Iran, through insurance and tariff support for the private dentists, it can be possible to create a major development in health education, prevention of dental carries and improvement of dental health indexes. Unfortunately, Iran's dental health system is treatment-based and has no obligation to cover preventive and educational services, such that people visit a dentist only when they have severe dental conditions (21). This means that tariffs for educational and preventive services (such as health education, fissure sealant and varnish fluoride) should be increased in order to persuade dentists in the private sector to enter this area. Increasing the willingness of dentists to operate in deprived areas is possible through the provision of appropriate tariffs, insurance coverage and service purchases, as well as improvement in infrastructure, amenities and equipment. Currently, the process of payment by the insurance companies to dentists takes such a long time that dentists are not keen on contracting insurance organizations.

The cost of dental materials and equipment signifi-

Table 1. Demographic Characteristics and the Factors Affecting Price Setting and Competition Among Private Dentists in the Kerman City, Iran

Factors	%
Distance to other dentistry offices, m	
< 100	56.6
100 -1000	27.7
> 1000	15.7
Patients' awareness of the prices before receiving the services	
Yes	94.6
No	5.4
Decreased prices to attract more patients	
Yes	61.5
No	38.5
Existence of competition between dentists to attract more patients	
Yes	67.4
No	32.6
The effect of HSEP on private dentists	
Yes	100
No	0
Dentists with higher qualities have the right to bill higher than the approved fees	
Yes	86.7
No	13.3
The base of change in dental prices	
Ministry of Health tariffs	17.7
Consultation with other dentists	70.1
Competition with other dentists	8.7
Other	3.5
Time period for updating service prices	
Every month	0
Every 6 month	18.9
One a year	64.8
With regard to the inflation	16.3
The degree of implementation of the Ministry of Health' tariffs	
Very low	17.5
Low	37.8
Medium	28.9
High	12.2
Very high	3.6

Abbreviation: HSEP, Halth Sector Evaluation Plan.

cantly affects the final costs of services, and according to the results of this study, it accounts for a large share of

Table 2. The Effective Factors on the Prices Applied by Private Dentists

Factor	%
Office rent	18.6
Dental materials	15.2
Secretary	12.6
Wage	42.3
Water, electricity, gas and telephone bills	4.7
Others	6.6

Table 3. The Correlation Between Different Factors on Value-Unit of Public Dentists in Kerman City

Factors	Correlation Coefficient	P Value
Disease severity-dentist error	0.71	0.02
Disease severity-visit time length	0.95	< 0.001
Dentist skill-visit time length	-0.66	0.018
Dentist skill-dentist error	0.66	0.004

dentists' income (15.2%). Therefore, we cannot set a universal tariff for services offered by different dentists as it depends on the amount of time a dentist spends on a patient, amount of experience a dentist has, and the type of dental materials and equipment used. In other words, we can neither ignore the pricing of dental services, nor can we set a precise and uniform tariff for the whole country. This emphasizes on the importance of setting the cap and floor (maximum and minimum value) for the tariffs of dental services. The price of services, purchasing priority and resource allocation are among the most important issues for strategic purchasing of health services by insurance organizations. In other words, it should be specified that the services are purchased from whom, for who, and with what price (22).

Due to the fact that there is a sufficient number of dentists in a limited area and the quite short distance between dentists' offices, there is a fairly good competition between dentists in attracting patients. However, as the cost of dental care is generally higher than what people can afford, the use of dental services is very low. This result is similar to the findings of a study in Finland that examined the status of competition among dentists. In that study, about 70% of dentists stated that they have encountered competition in their work environment due to increased reimbursement of service costs and demand of adults with missing teeth (23). In order to increase the competition between dentists to decrease their prices, the first step is to increase the coverage of dental care insurance in order to improve the utilization of dental services by low socioeconomic groups (24). People who have den-

tal insurance visit a dentist most probably for dental check-ups and other services (25). This can increase the competition between dentists to attract more patients. As an example for the importance of competition among medical service providers, Brosig-Koch et al. indicated that depending on patient characteristics and the payment method, competition can reduce over-provision and under-provision of services (26).

An increase in the number of dentists in an area leads to a reduction in prices for dental services due to increased competition. Also, the price of a service and its quality are positively correlated. Moreover, shorter waiting list leads to higher costs of dental services (27). In some countries such as Germany, the Netherlands, Sweden, Canada, the UK, Denmark, Japan and Australia, private insurance organizations are primarily designed to provide access to health and dental services, so that people are not concerned about the cost of services. Dentists also provide services in a competitive environment (28).

According to the results of this study, office rent accounted for 18.6%, staffs' salary accounted for 12.6%, raw materials accounted for 15.2%, water supply, electricity, gas and telephone accounted for 5%, and other fees such as taxation accounted for 4.7% of the cost of each service. Thus, 42.3% remaining revenue was the net income of the dentists and the value of their specialty and the time spent on the service. In a study in the UK, participants were asked to determine the importance of different factors in billing a porcelain-fused-to-metal dental crowns. The majority of participants referred to the time the dentist spends on the service and the laboratory costs as the most important factors, and then, they referred to the qualification of the dentist, cost of materials, level of patient's cooperation, local competition and the time of service (29).

According to the results, there was a significant correlation between dentists' skills and the time spent on each visit. By increasing the skill of the dentist, more attention is paid to the examination of dental diseases, which naturally requires more time. Also, a significant inverse correlation was found between dentists' skills and their error rate. This is while a study by Bayati et al. about the influencing factors on the relative value unit of general practitioners' visits in private medical offices in Tehran, Iran, indicated that there was no significant relationship between the physician's skill and the time length of visit and between physician's skill and error rate (30). These differences between the results of the two studies may be because of inherent differences between the work of physicians and dentists, which requires more assessment.

A significant positive relationship was found between the disease severity and dentistry error. It could be stated that the more complex the dental disease, the greater is the

probability of dentist's mistake. The importance of this relationship becomes clearer when dentistry errors are compared with other specialties. A study by Haghshenas et al., who studied the frequency of malpractice lawsuits referred to forensic medicine department and medical council during 2006 - 2011, indicated that the greatest number of proven medical malpractices were respectively related to orthopedics, dentistry, general surgery, general practice and plastic surgery (31).

Based on the results of this study, the correlation between dentists' skills, dentistry error, time length of visit and severity of disease was quite clear, therefore, these factors should be considered in determining fair and realistic tariffs for dental services.

4.1. Conclusion

This study indicated that although patients are aware of the price of dental services before receiving them, because of high prices of services and lack of dental insurance coverage, they cannot utilize dental services. Also, the prerequisite of competition between dentists in order to decrease the prices and increase the quality of services is the intervention of insurance organizations through covering services, especially preventive ones. In this regard, the Ministry of Health, instead of direct provision of services, should determine the cap and floor of dental services' prices, supervise its proper implementation and set quality standards for dental materials and equipment.

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Footnotes

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