Assessment of the quality of removable orthodontic treatment services

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Abstract

Aim: Quality management in orthodontics is a complex issue which aims at providing high quality services to patients. Development of a well established quality control policy according to regional characteristics and socio-economic features of the consumers, is of great importance. However, there is also an inevitable need for careful supervision regarding the implementation of the quality control program. This study is to evaluate and improve standards in removable orthodontic treatment.

Materials and Methods: Data was retrieved from students, patients, orthodontists and technicians filled the relevant fields of questionnaires. The patients were chosen from those who had passed their second follow up session. The following health service modules were assessed in the questionnaires: "The pre-admission phase for patients", "The process of admission", "The treatment, the follow up and the retention phase", and "The laboratory".

Results: The results were analyzed in two categories; the patient related questions (clinic) including modules from entrance to dismissal and the technician related questions (appliance construction). The pattern of the answers in the first category was: 8.1% "Very poor", 12.7% "Poor", 32.5% "Moderate", 48.8% "Good" and 0% "Very good". The second category of questions yielded the following pattern of response: 16.1% voted "Very poor", 61.2% voted "Poor", and 12.6% voted "Moderate", 9.6% "Good" and 0% "Very good". In general, the majority of participants (38.4%) marked the answer choice "Good".

Conclusions: Generally, the treatment provided for patients seemed to be of "good" standard. However, further attention has to be devoted to laboratory-related aspects of Orthodontic services.

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Quality, in its general meaning, is associated with products, outcomes, and defects. However, in a complex orthodontic practice, it is dependent upon a delicate balance between professional organization, patient satisfaction and environmental parameters. Total quality management (TQM) is a philosophy that has integrated a composition of processes and technical services into a philosophy about quality in organizations.

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"It aims at managing the practice in such a way that the primary process, the treatment, can be carried out at an optimal level."

The philosophy of TQM is based on four principles: [1, 2]

Management by fact or the "scientific approach"; which implies to the Deming circle of plan-do-check-act.

Management based on input and process; which refers to the equipment and the training of the employees.

Customer and employee satisfaction; as a basic compartment.

Continuous improvement.

Low quality services might be associated with inadequate motivation and commitment of all employees in an organization.

Over the years, the quality policy for orthodontic practice has been developed to adapt different health care systems in countries all over the world; however, due to structural and cultural differences in societies, there is an inevitable need for assessing and evaluating the implementation of these policies. Currently, the supervision of the quality of the rendered health services is provided by the national medical council and related legislative and executive offices. ; However, in some instances it occurs when there is a complaint from the system. Therefore, it is believed that the practitioner, him/herself might be the best means of guaranteeing high quality services. [2,3,4]

Recently, there has been greater emphasis on patient's perspective regarding the quality of health services. It is believed that greater patient satisfaction is associated with improved compliance and clinical outcomes. [5]

To the best of our knowledge, there is no consensus on a standard quality management protocol in orthodontic treatments among the academic centers in Iran. Furthermore, due to the different aspects of high costs in orthodontic treatment i.e. financial issues, pertaining time allocated to overall treatment process, traveling to and from the medical/dental centers; there needs to be a standard quality policy with strict supervisory systems to guarantee the implementation of the quality control among the team of care providers in order to achieve the optimum treatment outcomes.

This study sought to evaluate the current quality of orthodontic services in the country and to improve the regional treatment standards to optimum worldwide standards .[6]

Materials and Methods

Three hundred and sixty subjects including dental students, orthodontists, technicians and patients contributed to this survey, out of which the patients were to have passed at least two follow up sessions. Four types of questionnaires were designed to address four categories of participants i.e. patients, dental students, orthodontists and the technicians, according to the currently available standards philosophy. In order to validate the questions, we initially conducted a pilot phase; two orthodontists primarily assessed the questions regarding content validity and those voted irrelevant were eliminated from further evaluations. Furthermore, to avoid confounding factor, the questions with more than 15% missing data were excluded. We then performed an Item-to-total correlation analysis on similar questions and only included those with positive significant correlation ($P<0.05$). An additional analysis was conducted in each group of modules regarding internal consistency and reliability of the questions using the α coefficient of Kronbach and Spearman's correlation coefficient respectively. This project focused on five health service modules, including: "The pre- admission stage", "The process of admission", "The treatment phase with removable orthodontic appliance", "The follow up and retention phase", "The laboratory, sterilization process and equipment status". However, we had to modify the questions according to each group. The pattern we used is referred to as "Likert" scale with the following scores: "very poor", "poor", "moderate", "good" and "very good".

The frequency of answers were calculated and reported in percentage.

Results

We calculated the "missed" percentage, the "valid" percentage and the net percentage. The results were evaluated in two major categories: patient-related questions including " the pre-admission stage", " The process of admission", " The treatment phase" and " the follow up phase"; and Technician- related questions which referred to " The laboratory ". Tables 1, 2 and 3 render the distribution pattern of the responses in the patient-related group, the technician-related group and the overall questions. It is evident from the patient-related group of questions, that the quality of services was mainly considered "good" (48.8%). However, 61.2% of the contributors, in the technician-related group, assessed the quality as "moderate". Of the total 117 questions, the results yielded that the majority of participants i.e. 38.4% replied "good" (Tables 1, 2, 3).

Answers	Frequency	Percentage
Very poor	7	8.1%
Poor	11	12.7%
Moderate	28	32.5%
Good	42	48.8%
Very good	0	0%

Table 1: Distribution of answers in the patient-related group (86 questions)

0Answers	Frequency	Percentage
Very poor	5	16.1%
Poor	4	12.9%
Moderate	19	61.2%
Good	3	9.6%
Very good	0	0%

Table 2: Distribution of answers in the technician-related group (31 questions)

Answers	Frequency	Percentage
Very poor	12	10.2%
Poor	30	18%
Moderate	32	34.9.%
Good	45	38.4%
Very good	0	0%

Table 3: Net distribution of answers (117 questions)

Discussion

This project evaluated five aspects of orthodontic treatment, four of which were directly related to patients. The results indicated that the overall patients' assessment of the given services was "good". However, this statement is weak as it accounts for only 38.4% of the patients. Detailed analysis of the results, suggest that further attention is needed regarding the following insufficiencies: The services provided in the waiting room for both the patient and the accompanying person, the diagnosis phase in the department of diagnosis and oral medicine (regarding time, care and patience) , the coverage of treatment by reliable insurance companies, informing the patients with step by step stages of the treatment procedure and probable complications, the use of an appointment card to remind the patient of the next appointment, should the need of another visit arise as an integral part of the evaluation or clinic.

25.6% of the patients were unsatisfied with the quality of the services and believed it was of "poor" standard. This basically referred to the pre-admission stage which, again, highlights the need for further consideration.

Orthodontic treatment is basically an elective procedure; therefore patient's involvement in decision making is of great importance. Furthermore, health services that are committed to TQM policies mainly focus on patient centered quality standards provided by International Standard Organization i.e. ISO9000 and ISO9002. [4, 6, 7] On the other hand, patient based surveys have widely been used to assess patient's satisfaction regarding the quality of health services. Many practitioners are remunerated to assess their patients' views as a cost-effective means of quality improvement.[8]

A recent systematic review has assessed the efficacy of patient feedback and constant training of the health care providers on improving the quality of health services. The authors suggested that brief training as currently provided is not shown to be effective and furthermore, the study failed to retrieve sufficient reliable evidence regarding the efficacy of patient based surveys. [9] In the present study, we designed four sets of questionnaires in order to obtain a combination of detailed perspectives regarding the quality assurance of the removable orthodontic treatment as a multi factorial practice.

Another prominent contentious issue from the insurer's point of view (i.e. the insurance industry) would be the performance (outcome) measures of the treatment procedure, both technically and clinically. It is suggested that the professional organizations and the insurance companies support and encourage the development of well established outcome measures due to regional priorities and clinical practice guidelines (CPG). Unfortunately, there is lack of reliable evidence based resources in this issue; hence further clinical trials need to be conducted to introduce the appropriate outcome measures in each society .[10,11]

Quality assurance (QA) programs need to be customized according to health policies of different health care organizations; academic centers must therefore be considered differently from private clinics. Many dental schools have established quality assurance programs to improve patient care and maintain accreditation of the educational level. In 2007, Hoover et al designed one of these QA programs to improve the quality of services in three aspects i.e. infection control, failure of removable prosthodontics and interim case reports. Each aspect required different modules and programs. The proposed models could be potentially implementable in different academic centers, however, it needs to be customized and therefore, further detailed assessment is mandatory. [12]

The quality of orthodontic appliances and the laboratory related issues is another important component in quality management which probably affects the overall patient's judgment of the treatment procedure and might impose additional costs and problems to the patient. Some societies have proposed specific acts for the attention of dental technicians to help improve the durability and quality of the rendered appliances. [13, 14] In the present study, we revealed that over 60% of the respondents ranked this module as "moderate" standard which indicates the need for greater supervision in order to raise the current status.

Conclusion

There is still room for raising the quality of orthodontic services in all aspect. We predict that the standards could be raised by designing an overall protocol which would enable one to render the process (i.e. Plan→ Do→Check→ Act→ Plan …). The parts of the protocol are then carried out (Do), the results are observed and analyzed (Check) and the changes are implied in order to improve the procedure (Act). The costs of designing and implementing such protocol may be significant, however the benefits accrued can easily repay the efforts and resource expenditure. The next step is to adapt the current standards to the national health care system. This would require the establishment of leadership and organization of a caring and obey team, the satisfaction of patients and availability of services, constant self-assessment toward progress and continuous training of the staff.

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