

Behavioral Economics in Dentistry

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Abstract

In our increasingly complex society, the business aspects of dentistry have become more important for even the “survival” of certain dental practice styles. In other words, the dental practice must be managed as a business in order to have the ability to provide dental services to community. Important aspects of “surviving” include interaction between the professionals, within the team, with the public and especially with the patients. Understanding the basic principles of good communication should be a requirement for everyone and their application in oral health care is an absolute "must". This aspect of behavior inside the dental office will be visible within the final economic results. The successful practitioner would need to outline a savings and investment strategy and to make a road map to financial success. Ration between production, meaning giving dental therapy, and collection, meaning getting paid, should be around 98%. That’s mean 2% loss. The situation is more complex particularly if the cases of dental anxiety and dentist-patient’s complex relationship. Compliance and dental attendance deals with some of the aspects of acquiring and applying communication skills. Patient’s emotional state and neurophysiological subconscious could make big difference and impact on behavioral economics i.e. long-term successful financial outcome of dental practice. To facilitate this process, the professionals should recognize that a certain situation typically leads to biases, traps or errors; therefore, they can often sidestep it or take remedial actions. Conclusively, it will be better to understand the situation, communicate with the collaborators and patients around and make successful decisions. In this paper, a brief review is presented to illustrate and provide some independent evidence important for the effective leadership and communication in dentistry. Problem solving and positive communication will build confidence, increase rapport, maximize cooperation, minimize misunderstanding, and conclusively reduce the ever existing stress.

Key Words: Dentistry, Economics, Behavior, Management, Financial results, Neuromarketing, Stress

Introduction

This article explores the entrepreneurial role of doctors in dentistry. It reviews the doctor-team members-patients’ behavior as changing factor in dentistry, recently named behavioral economics in dentistry. This is new field based on the extensive literature, personal experiences and collegial professional communications that combines psychology, economics and dentistry. This new field started to investigate how individuals actually behave as opposed to how they would be have, if they were perfectly rational. People often make decisions in health care and dentistry that are not in their best interest ranging from failing to enroll in health insurance to which they are entitled, to engaging in extremely harmful decisions and behaviors, leading to total loss of dental and oral functions.

Patients may be reluctant to acknowledge depression or anxiety, or may not recognize that the conditions are separate because of overlapping symptoms. More qualitative research is needed to specifically address screening for physiological status of the patients leading to the decision making processes in dental care. Traditional economic theory assumes that people make decisions in a rational way, that our patients have the mental capacity to deal with huge amounts of information and choices. Melding economics with psychology, and with dentistry, behavioral economics acknowledges that people often do not act rationally in the dental and general health care decision making processes. Behavioral economics is only recently applied to the health care and to the dentistry. This article provides an overview of behavioral economics

strategies, reviews some of its contributions, both from patients and doctors site, and shows how it can be used in dental care industry. Patients’ correct decisions for the acceptance of the oral treatment plans and communications between patient and doctor, are important to boost the quality of dental work and to exceed doctor’s reputation (and income).

The Management in dental practice

A better quality of working life, together with the promotion of employment and entrepreneurship, exhibit increased and acceptable work quality and consistently met quality expectations for the products or services with minimal waste of time and resources (*Figure 1*) [1]. Effective organization should be focused on four key dimensions of quality of work and employment resulting in quality of life. Practically, it means ensure career and employment security, maintain

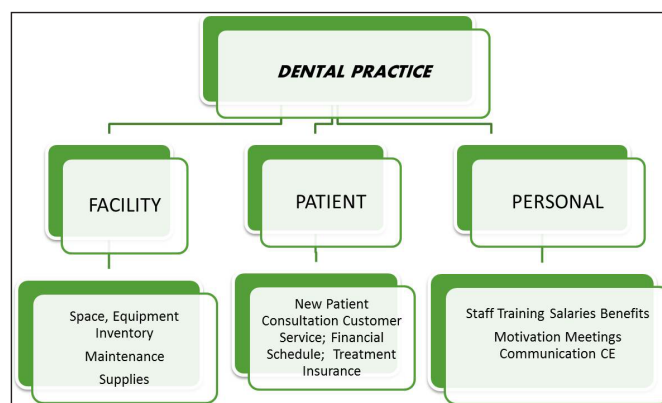


Figure 1. Complexity of the Dental Practice Management.

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the health and well-being of workers, develop skills and competencies, altogether reconciling work-life balance.

Having a work environment that promotes wellness and happiness will increase mood and productivity [2]. It is reported that happy workers are spending 80% of their week on work related tasks, while less happy workers spend only 40% of their time on work related tasks. The idea of having fun at work isn't new. What is important is addressing the direct connection to an employee's quality of work and life and their work performance without dramatically impacting private life. Therefore, in dental practice it is important to organize and manage workforce towards managing perception of patient expectation (Figure 2), but avoiding micro-managing [3]. No one likes their employer looking over their shoulder every minute of every day. More than ever there is a large pool of employees who don't need managing. Employees need to be given freedom to think for themselves and work in a space that isn't constrained at every turn. In order to produce exceptional results, quit micromanaging and recognize good work. Something so simple can improve quality of work. The new most important factor in the success of a dental practice for start-ups is "population to practitioner ratios" and "patient mapping". Patient mapping is invaluable in determining where to relocate practices as well to marketing practices. Patient mapping is extremely helpful to practice buyers, practice sellers and practice brokers.

As chief dentist should understand the team dynamics, and there are some things that they can do to cultivate an environment for team success. Organizational leaders can delegate leadership to team members who have the time and skill to help

1. Teams map their work flow and clarify roles to improve functioning [4].
2. Positively influence the culture, composition, and size of teams, all of which affect team outcomes.
3. Involve team members in decisions that affect them, which in turn affect team member loyalty, cooperation, and retention.
4. Create a culture of safety where medical teams are more likely to reduce medical errors.

A SWOT (Strengths, Weaknesses, Opportunities, Treats) analysis (Table 1) can offer helpful tool for good perspectives at any stage of the managing possibilities for new efforts or solutions of problems [5]. SWOT analysis looks at strengths and weaknesses, and the opportunities and threats that business confronts. By focusing on the key factors affecting business, now and in the future, a SWOT analysis provides a clear basis for examining business performance and

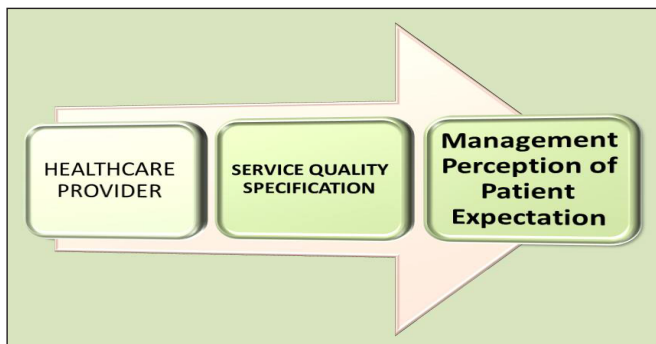


Figure 2. Model of healthcare performance.

prospects. It helps making decisions about the best path for dental practice initiatives for new opportunities, for success in context of threats, or to clarify directions and choices. It can be used to determine where changes are possible. If you are at a juncture or turning point, an inventory of your strengths and weaknesses can reveal priorities as well as possibilities [6,7] and help to adjust and refine plans mid-course. A new opportunity might open wider avenues, while a new threat could close a path that once existed. Besides this, SWOT analysis also offers a simple way of explaining initiatives or program and an excellent way to organize information gathered from studies or surveys. This analysis should be a part of a regular process of reviewing of business performances. Dentist professionals may also want to carry out a SWOT analysis in preparation for raising finance or before bringing in consultants to review its business. Suggestion, find out what customers think using a customer satisfaction survey. Many businesses find a consultant most useful for their first SWOT analysis. Concentrate especially on identifying weaknesses and threats. Be aware that lack of honesty is a common problem. For example, most people find it easier to identify strengths and opportunities, particularly if the performance of key people (including yourself) is one of the weaknesses. Update your conclusions from any previous SWOT analysis. For example, a strength may no longer exist (e.g. if last year's cutting edge product is now obsolete). Assess whether strengths (or weaknesses) give a business a significant competitive advantage or disadvantage. For example, your strong research and development program is useless unless you have the resources to exploit the results. Do not be surprised if certain factors crop up as both strength and a weakness. Create a simple, clear action plan. There is no point holding a SWOT analysis if it does not result in action [7].

Table 1. SWOT analysis.

Swot	Internal Factors
Strengths	Multispecialty
	Evidence based
	High quality dental treatments
	Unique Selling propositions (USP)
	Comfort before and after treatment
	Reputation
Weakness	Employ's productivity
	Shortage of staff
	Waiting time –incorrect schedule
	Bad financial management
	External Factors
Opportunities	location
	Parking available
	More staff –recruitment
	Continuing professional development (CPD) or Education (CE)
	Reducing costs
	networking
Treats	Competition
	Over- marketing
	General economy situation
	Facilities
	Staff dissatisfaction

Strengths of dental practice

The strengths of dental practice are usually easy to identify, through continuing dialogue with customers and suppliers. The records will also help to indicate areas particularly strong (e.g. rising sales for particular service). For most businesses, strengths will fall into few distinct categories. Sound finances may give advantages over competitors. Important factors might include: positive cash flow, growing turnover and profitability, skilled financial management, good credit control and few bad debts. Marketing may be the key of the success [8]. For example, business will be profitable with market leadership in a profitable niche, a good reputation and a strong brand name, an established customer base, effective research and development, use of design and innovation, a skilled sales force and the ability to make quick decisions. The other things needed are:

- 1) Skilled employees,
- 2) Successful recruitment, and
- 3) Effective training and development:
- 4) Good motivation and morale,

5) Efficient administration. Strengths may include the right premises and plan, and good sources of materials. The dental practice may benefit from modern, low-cost production facilities; spare production capacity; A good location; effective purchasing and good relationships with suppliers. The strengths are not always, what they seem. Strengths may imply weaknesses (for example, market leaders are often complacent and bureaucratic) and often imply threats (for example, your star doctor colleague may be a strength — until he resigns) [9].

Weaknesses of dental practice

The weaknesses are often known, but ignored. A SWOT analysis should be the starting point for tackling underperformance in business [10]. Poor financial management may result in situations where insufficient funds are available for investment in new office or service development. All available security, including personal assets and guarantees, is already pledged for existing borrowings, poor credit control leads to unpredictable cash flow. Typical problems include: poor location and shabby premises, outdated equipment, high cost of overall management and low productivity.

Opportunities for dental practice

External changes provide opportunities that well managed businesses can turn to their advantage. Changes involving organizations and individuals which directly affect business may open up completely new possibilities. For example, deterioration in a competitor's performance, or the insolvency of a competitor, improved access to potential new customers-patients and markets (e.g. new location), increased requests of existing customers, or new leads gained through them, the development of new distribution channels (e.g. the Internet), improved supply arrangements, such as just-in-time supply or outsourcing non-core activities, the opportunity to recruit a key employee from a competitor, the introduction of financial backers who are keen to fund expansion, the broader business environment may shift in your favor [11]. This may be caused by:

- 1) Political, legislative or regulatory change. For example, a change in legislation that requires new pricing to purchase a product;
- 2) Economic trends. For example, falling of interest rates

reducing the cost of a capital;

3) New technologies, including new materials, processes and information.

Threats to dental practice

Threats can be minor or can have the potential to destroy the dental business. Changes involving organizations and professional individuals, team members that directly affect dental business can have far-reaching effects. For example, loss of a significant patient group customer, creeping over-reliance on one distributor or group of distributors, failure of suppliers to meet quality requirements, price rises from suppliers, key personnel leaving, lenders reducing credit lines or increasing charges, a rent review threatening to increase costs, or the expiry of a lease, legal action (e.g. being sued by a patient). The broader business environment may alter to dental office disadvantage. This may be the result of:

1) Political, legislative or regulatory change. For example, new regulations can increase costs and require business redesigning;

2) Economic trends. For example, lower exchange rates reducing income from other offices;

3) Social developments. For example, consumers demand for “environmentally-friendly” products (amalgam-free restorations);

4) New technology. For example, technology that makes your service obsolete or gives competitors an advantage (implants, laser);

5) Protect yourself against threats. For example, build relationships with suppliers and customers, foster good employee relations, ensure you have clear and reasonable contracts with suppliers, patients and employees. Successful businesses focus on capturing market niches and creating ‘barriers to entry’ to reduce potential competition.

Communication in dental practice Neuromarketing

To manage dental practice is much like managing your life and being in control. When things get out of control, most dentists begin to work for the practice rather than the alternative. How do you manage your dental practice? What systems do you have in place? How do you manage

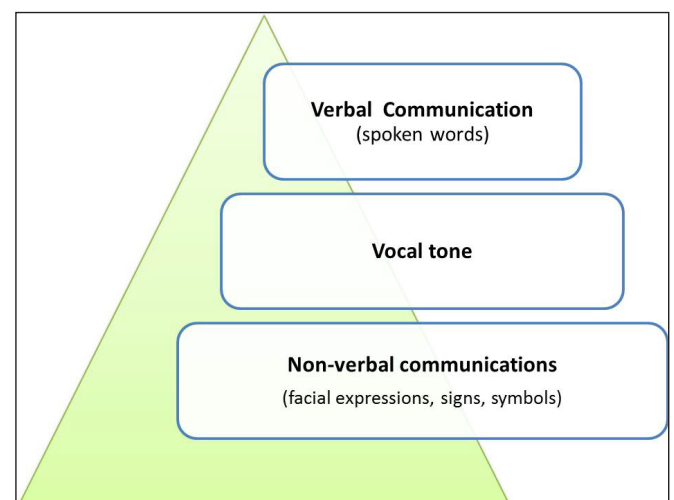


Figure 3. Accurate diagnosis and effective dental treatment may be compromised by poor communication between healthcare dental team and patients. It would be beneficial for the health care staff (dentist, assistants, receptionist) to have communication training which promotes awareness and understanding of the needs of the patients.

your patients and team? Most dentists deal with these few questions on a daily basis. One of the most important aspects of every position of the dental team is to have excellent communication skills [11,12]. Interacting with people is a key part of oral health care professionalism, within the team, with the public and especially with the patients (Figures 4 and 5). Understanding the basic principles of good communication should be a requirement for everyone and their application in oral health care is an absolute "must". The structure of nonverbal communication expressed as eye-contact between two human could be analyzed using graph-theoretic tools involving a theorem of König on bipartite graphs and various results concerning directed graphs. A taxonomy for possible eye-contact configurations is constructed. Theory formed from a sequence of theorems proved about classes of eye-contact graphs derived from the taxonomy, is interpreted to analyze possible levels of communication. This theory can apply to any living system [13,14]. Communicating with others becomes more fruitful, if some basic conditions are fulfilled, such as:

- 1) Emotional understanding: health care professionals should understand the problem through the patient's point of view [15];
- 2) Respect: recognition and full acceptance of the patient as a person [16];

3) Authenticity: honesty, real expression of views without hypocrisy;

4) Warmth and unconditional positive recognition;

5) Self exposure: health care professional reports personal experiences from his perspective;

6) Resolution: health care professional's ability to identify and name patient's feelings. All these basic conditions are summarized in Emotional Intelligence (EI) model (Figure 4) as new concept and symbolized by the abbreviation EIQ (Emotional Intelligence Quotient) [12-14]. It includes skills such as being able to control the impulse, to curb the impatience, to properly regulate mood and to prevent the frustration, to stifle the ability to think, to have empathy and hope. EIQ may be equally and sometimes more powerful than IQ(Intelligence Quotient). They are not two conflicting but rather two distinct capabilities. Many people connect spirit with emotional insight. Academic intelligence doesn't have relation with emotions and feelings. The most intelligent persons among us could be drowning into an ocean of undisciplined impulses and unbridled passions (Figure 4). Here are some fundamental strategies to resolve problems in team, when you have to deal with a difficult personality at work, or if you simply disagree with a colleague about a work issue or process. First of all, try and anticipate when conflict is likely to emerge inside your working environment. When workplace change occurs, such as restructuring, changes in job responsibilities, layoffs, or shifts in management, there is bound to be some increase in conflict. Be proactive! Anticipate problems and don't wait until they begin to start addressing them. Work on your communications skills and learn to help others to communicate more effectively in their interactions with you. Management of conflicts in successful way, happens only with effective communication. Be open to feedback from others! If you experience feedback as threatening, try hard to put aside defensiveness and rigidity so you can really "hear" what others have to say. Keep dialogues going on! When co-workers, team members, and supervisors maintain open lines of communication, potential conflicts are more likely to be avoided and will be far less difficult to manage. Don't assume that the conflict will "just go away." Unmanaged conflict doesn't disappear; it just goes underground where it can become even more insidious.

Patient's emotional state and neurophysiological subconscious could make big difference and impact on our work and relationships inside the team. It is obvious both, in area of General and Specialist Dentistry. Roughly, 90% of our patient's behavior is subconscious. They cannot actually explain to which Dental Clinic or Doctor they are preferred to direct. Traditional research, trying to answer on these dilemmas, typically involves questionnaires, focus groups, or in-depth interviews, and they are of dubious value. The answer can be found in Neuromarketing. Neuromarketing is a sum of completely new methodologies that utilize a variety of behavior assessments modalities that include verbal and nonverbal communication, observation and interaction, written questionnaires and proper listening and attitudinal skills, designed to provide the development of a positive personalized and professional patient-doctor relationship [17].

Look at numbers Financial management

Historically, there were times when the dentist just handled the "procedures" for the patient. In our increasingly complex society, the business aspects of dentistry have become more important for even the "survival" of certain dental practice styles. In other words, the dental practice must be managed as a business in order to even have the ability to provide dental services to your community [18]. By taking the time to outline what you wish to accomplish with a savings and investment strategy, it gives a road map to financial success

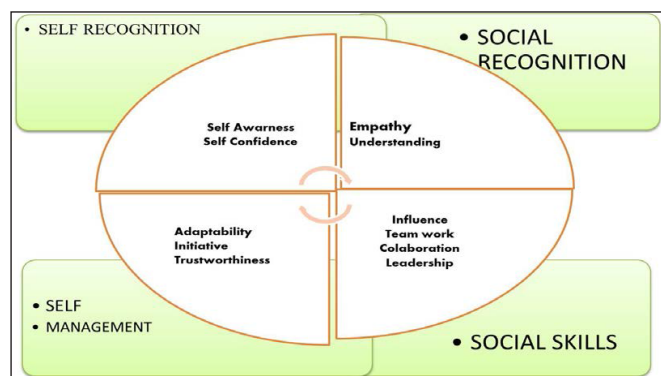


Figure 4. Emotional Intelligence Model.

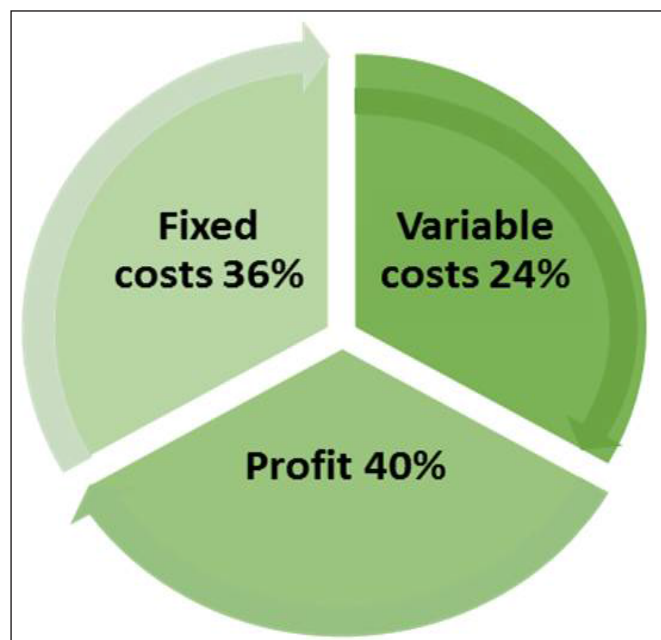


Figure 5. Summary of the financial management in Dental Office.

(Figure 5). Ratio between Production, meaning giving dental therapy, and Collection, meaning getting paid, should be 100 to 98%. With a minimum loss of 2%. Advice, write everything down and calculate every day (every month) how much you “produce” and how much you “collect”. Don’t rely solely on your memory for this exercise. It is far better to take the time to establish a written record of your earnings and decision-making. Like everything else in life, your objectives will change over time. Simply, be prepared to make revisions as your income increases, your family expands, you change jobs and so on. In other words be flexible! One of the most fascinating studies of rational and irrational behavior takes place in the financial industry named Behavioral Economics [19]. It is easy to assume that financial and investment decisions are based upon carefully calculated formulas, trends, and other evidences. A qualified advisor can do financial planning. Either way, the dentist should follow a process that puts the emphasis on the goals, needs, and unique situation, not on cookie-cutter solutions or specific products. The goals can be long term, such as buying a dental practice and paying off the loan, or short term, such as saving for a vacation. Either way, write them down. One way to organize financial information is with a balance sheet. List everything you owe (your liabilities) and everything you own (your assets). Subtract the total capital amount of the liabilities from the total money amount of assets, monthly income and monthly expenses. Include both fixed expenses, like rent or a mortgage and discretionary expenses, like entertainment. Inventory of other financial information, including insurance policies and estate planning documents, should be collected and analyzed. Dental business should be great with a realistic picture of the financial life. The basics include: developing a plan. Let’s assume that one of the goals is to manage practice income better. The plan might include different income resources such as Public programs, Private pay Patients and Commercial Insurances. Patient care revenue, while generally paid on a fee-for-service basis, also may be paid on a fee-per-visit or fee-per-covered member (e.g., capitation) basis. Regardless of how the payment is made, the major sources of patient care revenue for safety net dental clinics tend to come from the public or insurance sources, but it depends on country.

Quality approach to understanding what your patients’ need and want

Delivering superior customer service that exceeds patient expectations will ensure enhanced treatment acceptance and patient referrals. In most dental clinics today there is competition for attracting and retaining patients and it is critical to remember that in most cases exceptional customer service is truly the only thing that differentiates one from other competitors. It is important to remember that humans are addicted to feeling good and looking good. Therefore, understanding patient’s need very quickly is of utmost importance. What it is that they need, to feel good enough and to happily pay you for your services? If you have exceptional communication skills and understanding how your patients feel, it will help you greatly (Table 2). Patients will refuse treatment for two main reasons, lack or poor communication leading to unfulfilled expectations and lack of money to pay for the treatment. It is up to the dentist to understand the

situation. Emotional Intelligence Model (Figure 4) would be important in this moment and would facilitate procedures. Additionally, the indicators of patients’ intent about future treatment would help (Table 2). There are three main challenges on that road, while trying to understand what your patient want: ATTENTION, EMOTIONAL ENGAGEMENT AND EMPATHY [16,20,21]. Be careful, patients will not or cannot express consciously exactly what they feel or want, due to complex relationship between different minds: Conscious versus Subconscious, all that should be analyzed and treated by Neuromarketing methodologies. Therefore, start with simple steps [22], design a behavior management program to lessen and to ameliorate anxiety, conflict and aversive behavior in all phase of treatment [23-25]. Insist, to be emotionally intelligent and give full attention to the communication with patient, starting from non-verbal communication, facial expression, facial coding, and tone of voice and verbal expressions (Figure 3). It is extremely important to make a correct assessment of the patient’s psychological and emotional needs. Understand the factors that are responsible for creating Difficult Patients, through gaining basic knowledge of the common emotions such as Fear, Anxiety and Phobia [23,24]. Understand the interplay of cultural factors [26] and their influence on behavior and try to understand and use the various behavioral modalities that help modify patients’ behavior.

Measuring and managing patient emotions is critical in gaining a competitive advantage. Emotions shape opinions by shaping behavior and effects will be seen in financial outcomes. When trying to design a better service it is needed to understand the emotional impact that it has on the patients. Traditionally, whenever we need patient insights we would simply ask. However, in order to gain a complete, 360 degree understanding of the patient, we need to go straight to the source – to the brain. Neuroscience tools now offer insight into the role of the brain and subconscious emotion in Decision Making Process. While the scientific terminology can sound complicated, emotional measurement is simple, and means that people refer friends to the doctors they like and they trust [18].

Dental Leadership is not a Position or Title

Good leadership is important for the success of any business oriented organization. Leaders have a key role as ‘change agents’ and role models. ‘Change agents’ or doctor require four skills to manage change effectively (Table 3). Those competencies and behaviors are gathered around four domains: Leading Self, Leading with Strategy, Leading People and Leading for Results. Looking in details they are:

- 1) The ability to lead self and work independently;
- 2) To recognize characteristics of leading vs. strategy;

Table 2. Indicators of patients intent, needs and wants.

Purchase intent	To make gain
Emotionally	To avoid fear and loss
Attention activation	To have pleasure
Pride	
Perceived product value	Right Pricing Strategy
Social approval	
Uniqueness among competitive displays	
Compatibility with Dental Office Brand	

Table 3. The nature and effect of a positive leadership style.

Leadership	Lead Self	Integrity and Excellence
		Adaptability and Agility
		Emotional Intelligence
		Life Long Learning
		Courage
		Energy and optimism
	Leading vs Strategy	Leading change
		Innovation
		Healthcare and Financial Perspectives
		Strategic Thinking and Planning
		System Thinking
	Leading People	Evidence Based Decision
		Coaching Performance Improvement
Teamwork and Collaboration		
Building Relationship, Trust		
Leadership	Leading for Results	Effective Communication
		Empowering others
		Conflict Management
		Safety and Technology
		Productivity and Efficiency
		Customer Focus
		Quality and Process Improvement
Driving Results		

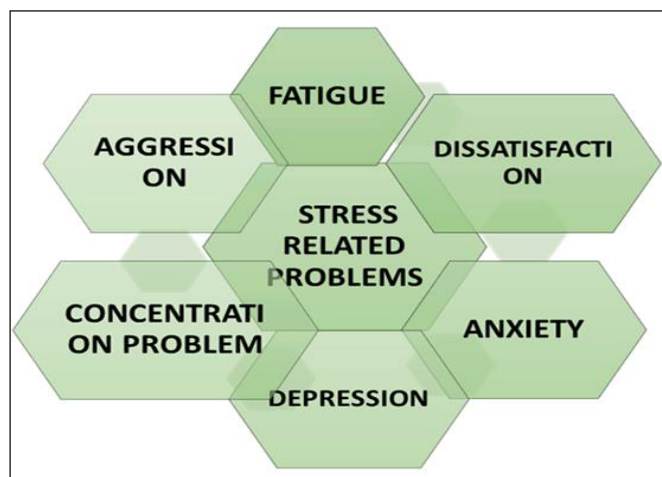


Figure 6. Psycho-neurotic disorders of Dentist under the stress.

3) To lead others: collaborators, team members, suppliers, patients;

4) Ability to lead for results.

These are four main groups of basic characteristics of good leader, but then come much more. It is very important to have ability to support the management hierarchy. To use skills of an effective collaborator, able to compete in ways that enhance rather than destroy co-operation. To develop high trust relationships, based on high ethical standards. Self-confidence, tempered with humility, respect for the process and content of change are fundamentals of successful leader. It can be concluded that having ability to work across business functions and to be ‘multi-faceted’ and ‘ambidextrous’ are essentials on the leaderships’ strategic list. The types of challenges that dental clinicians face when leading within the complex setting of a modern healthcare services include diverse and changing needs, increasing patient expectations, and the high cost of new interventions and treatments[26,27]. This requires clinicians to: consider the needs of the wider

patient population; to take decisions that not only make the best of resources but also deliver clinical quality. The functional results-oriented Leadership style is focused on the process inside the group based on the three areas, namely, Individuals, Team and Tasks. Dental Leadership is not a position or title; it is not a simple declaration by any doctor. Leadership is an ASSESSMENT made by OTHER clinicians, patients or team members about the physician’s ability to lead and take care of the patients, team and complex clinical environment. However, defining leadership as an assessment by others, represent a challenge as every person has his/her own definition of what leadership is or should be; therefore, feedback about leadership can be overly subjective and unfocused. Champions, who maximize performance and optimize safety, thus enable their groups and organizations to thrive in the new world of dental healthcare.

Dentist under the stress

Health professionals are subject of higher level of stress than the average worker [28,29]. Little has been written on these subjects, specifically in oral and maxillofacial surgeons. Anecdotally, dentists have been singled out as the health care professionals more likely to be subjected to severe stress, burnout, failed marriages, depression, substance abuse, and commit suicide [30-32]. However, with oral and maxillofacial surgery being a particularly high-stress specialty of dentistry, a study of the dental literature regarding stress may be relevant [26,27]. This article explores the myths and realities of stress and burnout in oral and maxillofacial area and the coping skills, both adaptive and maladaptive used by practitioners to deal with their stress. A general dentist spends many years in dental school learning perfection and "ideal" treatment for his or her future patients. Yet, the realities of private practice are that many patients, due to financial restraints, poor insurance plans or low appreciation of quality dental care, will not accept "ideal" treatment plans. The result is that the dentist is continually forced to compromise treatment and is frustrated in not being able to reach his or her ideal treatment goals. Consequently, the dentist is often forced to operate a "fix-and-repair" business, providing compromised treatment for patients who refuse the full spectrum of dental care. The dentist then ends up emotionally carrying the responsibility for less than ideal results while the patient continues to express unrealistic expectations.

The psychological stress of working with apprehensive and fearful patients can be devastating to the dental practitioner (Figure 6) [18,22,29]. There is now considerable evidence that dentists experience patterns of physiological stress responses (increased heart rate, high blood pressure, sweating, etc.) that parallel the patient's responses when performing dental procedures that evoke patient fear and anxiety. This in turn can lead to an early heart attack for the dentist. Nearly half of dentists (48%) suffer from stress, followed by patient complaints (32%), compliance (30%), money (29%) and work-life balance (26%). Other significant causes of stress included conflicts between team members (21%), dealing with phobic or anxious patients (20%) and guppy appointment books (20%). As a comparison, results for the team as a whole demonstrated that running late was the major cause of stress (52%), with conflicts between team members showing next at 32% and followed by work-life balance at 28%. The stress

suffered by dentists appears to cause a significant incidence of physical symptoms, with nearly a half (45%) suffering from insomnia; other significant symptoms include tiredness (43%), anxiety (40%), bruxism (31%), headaches (30%) and depression (27%) amongst others. Only 15% stated they had experienced no physical symptoms from their stress.

Many contemporary aspects of the study of the problem of stress are associated with the key hormonal axis of the stress reaction – the Hypothalamo-Hypophyseal-Adrenocortical System (HHACS). The development of this area of study is the incarnation of his insightful suggestion of the existence of hypothalamic Corticotrophin-Releasing Factor (CRF), “the first stress mediator.” CRF is the main neurohormone involved in activating the hypophyseal-adrenocortical axis in stress. The gastrointestinal tract in general and the stomach in particular are very sensitive to various stress situations. Gastric ulcer disease, which is a common pathology, is regarded as a “stress-related disease”.

So what about you? What stresses you out and how do you cope with the stress? The 30-40 years of age group scored highest in exhaustion. The score of professional efficacy decreased with age and increased with educational levels. Role overload, responsibility, physical environment, reaction and self-care were major predictors for exhaustion. Role insufficiency, role overload and responsibility were major predictors for cynicism. Role insufficiency, social support and rational/cognitive were major predictors for professional efficacy.

The suicide rate of dentists [31,32] is more than twice the rate of the general population and almost three times higher than that of other white collar workers. Emotional illness ranks third in order of frequency of health problems amongst dentists, while in the general population it ranks tenth. Coronary disease and high blood pressure are over 25% more prevalent among dentists than in the general population. Dentists suffer psycho-neurotic disorders at a rate of 2 1/2 times greater than physicians (*Figure 6*). The number one killer of dentists is stress-related cardiovascular disease. The dental profession in North America loses the numerical equivalent of one large dental school class each year. Why is our profession so prone to stress-related physical, mental and social problems? Since it is unfortunately too late for most of us to switch into law or engineering, at least we can examine some of the causes of stress in dental practice and then see if we can find some solutions to them and hopefully live a little longer and happier.

The average dentist spends most of his or her life confined to a small, sometimes windowless, operatory, which is smaller than the cells in our penal institutions. The work is intricate and meticulous and is performed in a small, restricted oral space. The procedures are both physically and mentally taxing and as a result, strain, back troubles, circulatory disorders and fatigue are common. It is relatively easy, over a period of time, for a dentist to become both physically and emotionally “burned-out”[33].

Most dentists practice are isolated. Consequently they do not have the opportunity to share and solve problems with their colleagues the way other professional groups do through peer support. The problem of isolation is compounded by the

fact that dentists tend to be competitive with one another. This trait is unfortunately a bi-product of our competitive dental school training. It is then reinforced after graduation by the intense competition created by the surplus of dentists that now exists in many cities and large metropolitan areas.

The relentless pursuit of perfection and permanence in an inhospitable oral environment is a major cause of stress and frustration for dentists. The stress of perfection is instilled in dental school. However, it must be tempered with the realization that the most perfect restoration will ultimately be rendered imperfect by time and patient neglect, despite the efforts of the dentist.

Economic pressure forces many dentists to work through their lunch, an hour that is the single most important period of the work day. Instead of using the time to get proper nourishment and much needed rest, he or she will often accommodate an additional patient or two. This inevitably leaves the dentist tired and exhausted by the end of the day.

Another result of the economic pressure of practice is that dentists often feel that they literally cannot afford to be sick or take holidays. When a dentist is absent from the office, the income totally stops, but the high overhead expenses continue to grow relentlessly.

The dentist who works all the time and never takes time off might make a few dollars more, but there is a high price to pay - BURNOUT! And when dentist burnout, they become emotionally and mentally exhausted, develop a negative, indifferent or cynical attitude towards both their patients and their staff, and evaluate themselves negatively.

Attempting to stay on schedule in a busy dental practice is a chronic source of stress. Dentistry, unfortunately, seems to be governed by Murphy's Law -- "If anything can go wrong, it will go wrong and usually at the worst possible time". Also, dentists often find that the first 90% of a complicated dental procedure takes 90% of the allotted time and the last 10% takes another 90%. And as we all know, once we are behind schedule there is no way to catch up. In conclusion stress can never be totally eliminated from dental practice. However, it must be minimized as much as possible in order to avoid the many stress-related physical and emotional problems that it causes. The key to managing stress successfully is to first recognize and understand causes. Once the causes have been identified and understood, preventive steps can be taken. Some of the preventive measures that could minimize the stress of dental practice are as follow:

- 1) Improving the working environment at the office;
- 2) Becoming less isolated and sharing problems with fellow practitioners;
- 3) Working more sensible hours and taking time each day for a leisurely lunch break;
- 4) Taking holidays whenever the pressures of practice start to build;
- 5) Learning how to better handle patient anxiety and hostility; and finally
- 6) Adopting a program of physical exercise, such as regular walking or working out at a local health club.

Conclusion

The authors' findings suggest an overview of several

important behavioral economics concepts in relevance to dentistry as a profession which is suffering in the current economic depression [34]. Work for dentists is thinning and patients are less willing to accept the costs of treatment plans. It is already more than ten years that we are facing serious global economic depression in many different industrial sectors, including dentistry. The dental business have experienced reduced consumer demand and reduced earnings [35]. Focusing on general practitioners, the authors analyzed and made conclusions that significant behavioral factors are

important for dentists' reputation and income. The authors suggest the need to consider the business side of dental practice, in particular, the importance of quality, creativity and innovation, alongside the importance of meeting the needs of patients. In future, an entrepreneurial approach will be required in order to sustain dental practice in an increasingly competitive environment. This finding, combined with the potential implications of health care reform for dentistry, causes the authors to believe the future prospects related to dentists' net income levels remain uncertain.

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